CHILD DEVELOPMENT

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SECOND EDITION

New York Toronto London
McGRAW-HILL BOOK COMPANY, INC.

PREFACE TO THE SECOND EDITION

Changes in areas of interest in children have been marked in the last decade. In general, attention has shifted from studies of a more abstract to those of a more practical sort. In order that these new areas of research might be reported, extensive revision of the original text has been necessary.

Another factor which has had a marked influence in directing the form the revision has taken is the recent trend in many colleges and universities to separate the study of child development from that of adolescence and to present the two in different courses. Furthermore, owing to the fact that present-day interest in both phases of development is so lively that an increasingly large amount of research is available, it would be impossible to cover the whole span of development adequately within one book.

It, therefore, seemed wise to limit this book to a study of the childhood years, proper. This has necessitated the removal from the original text of all material relating to adolescence. It has also necessitated a shifting of emphasis to areas of behavior which are predominantly characteristic of childhood.

The bibliography has been greatly expanded to cover the new research in the field. While not every reference reported has been quoted from directly, all have been consulted and the material contained in them has been used in one form or another. The author is greatly indebted to all who have graciously given their consent for the use of their material in this book.

The author is also greatly indebted to her many professional colleagues whose criticisms and suggestions, based on their classroom experience with the first edition of this text, have been used in planning its revision.

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PREFACE TO THE FIRST EDITION

There are two possible ways of studying the child's development: (1) the cross-sectional approach, in which major developmental periods such as infancy and adolescence are analyzed, to obtain a complete picture of the child at each age; and (2) the longitudinal approach, in which different aspects of behavior, such as speech and play, are traced from their genesis to their mature forms. Both approaches have good and bad features, and either one serves to present an adequate picture of the developmental pattern of the childhood years.

The second approach, the longitudinal one, has been adopted in this book. It is simpler to grasp than the cross-sectional one, owing to the variations within each developmental stage resulting from individual differences in development in children of the same chronological age. Furthermore, it conforms more to the pattern followed in most textbooks in general or educational psychology, study of which is essential as a background for the study of child psychology; and the transition from a basic course to a specialized course is simplified, as the mental set of the student does not have to be altered radically.

There are many excellent books available in the field of child psychology today, but for the most part they are limited in scope to the childhood years. There are also many texts that deal exclusively with the adolescent years. But very few combine the childhood with the adolescent years. This book, by contrast, has attempted to cover the entire period of development, from conception to maturity; and by doing so, it should give the student a complete picture of the pattern of human development.

Many books have emphasized the child's development in relation to his schooling, thus placing too much stress on one factor in his environment. To correct this, in the present work, the child has been observed free from the influence of any one specific environmental influence, while at the same time attention has been given to an analysis of the different environmental factors that affect the course of development.

The author wishes to express her sincere thanks to those whose suggestions and advice have proved to be invaluable in the writing of this book, particularly to Enrica Tunnell, research librarian of the Psychology Division of the Columbia University Library, for her aid in the collection

of data and preparation of the bibliography, and to the author's husband, Irland McKnight Beckman, for his helpful suggestions in the preparation of the manuscript for publication.

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June, 1942

TEXT-FILMS ON CHILD DEVELOPMENT

The following is a list of the McGraw-Hill Text-Films, 16mm sound motion pictures and 35mm silent filmstrips, available for use with this book. A brief description of each of these is given at the end of the chapter with which it is correlated.

PRINCIPLES OF DEVELOPMENT (motion picture 1½ reels)
Correlated with Chapter 2

HEREDITY AND PRENATAL DEVELOPMENT (motion picture 2 reels)
Correlated with Chapters 3 and 4

CHILD CARE AND DEVELOPMENT (motion picture 1½ reels)
Correlated with Chapter 5

CHILDREN'S EMOTIONS (motion picture 2 reels)
Correlated with Chapter 8

SOCIAL DEVELOPMENT (motion picture 1½ reels)
Correlated with Chapter 9

CONTENTS

CHAPTER I

THE HISTORY OF CHILD PSYCHOLOGY

Introduction. Child psychology, which studies the development of the child from conception to maturity, is recognized today as one of the most important of the specialized branches of psychological research. It is a phase of the study of the child which depends upon controlled observation and experimentation. Interest in the scientific study of the child has come from many sources, especially medicine, education, psychiatry, mental hygiene, sociology, and religion. Each has contributed its share of information to enable the psychologist to round out his own technical studies and then develop a complete picture of the typical development of the average as well as of the exceptional child.

Because the present-day interest in the study of the child is the culmination of an interest which began with educators and biologists of the seventeenth century, a short history of how child psychology has developed is useful as a background for an adequate understanding of the scientific investigations of children today. It will help us to see why research has advanced our knowledge of different phases of behavior much or little. It will show why certain of the important growth stages have been adequately investigated while other equally important ones have been almost completely neglected.

ATTITUDE OF SOCIETY TOWARD CHILDREN

The attitude of society toward the child has had a great deal to do with the interest or, rather, lack of interest in studying him. The few references made to children in history or fiction through the centuries show rather conclusively not only that the child's position in society has always been an unimportant one but also that little attention was given to the study of his development or capacities. What interest did exist was limited almost exclusively to that of the child's physical welfare. Definite information about the type and amount of clothing, food, exercise, and baths suitable for children of different ages is a part of the folklore of every country.

Interest in Education for Adulthood. Anthropologists tell us that among primitive peoples the position of the child within the tribe varied according to the degree of civilization attained by the tribe. In general,

the attitude of primitive peoples was that the child's prime purpose in life was to be of use to his parents as he grew older. With this purpose in mind, the child was brought up to believe that when he reached adulthood he would suppply his parents with food, clothing, and shelter; would take care of them in sickness and old age; would care for the family property; would make the sacrifices to the gods that their religion prescribed; and, in general, would be an asset to the family.

Instead of trying to understand the child and instead of allowing him to develop naturally, primitive peoples attempted to mold each child according to their standards of what a child should be. What little education was given was in preparation for the responsibilities he would be expected to assume as he approached maturity. Freedom for individual development was an unheard-of thing, and the child who could not or would not conform to social standards was regarded as unsatisfactory or considered a disgrace to the family.

A similar attitude toward the child prevailed among the ancient civilizations. In Greece and Rome, where the position of the child was important because he would, in time, be a citizen, an attempt was made to mold him according to the pattern of a citizen. Statesmen and philosophers concentrated their attention on his education as a preparation for the responsibilities which would some day be his. Even girls, as future mothers of citizens, were educated according to the approved standards. No thought, however, was given to the study of the nature of the child, and no attempt was made to develop him as an individual.

With the coming of Christianity, the child sank into an obscurity from which he did not emerge before the latter part of the Middle Ages. It was not until the reawakening of interest in the classics, during the Renaissance period, that an interest in the child and a study of his needs appeared. Gradually the attitude of the philosophers and teachers toward the child changed. Instead of planning an education designed to mold the child according to an approved standard, the child was made the starting point of education and was carefully studied before his education was planned.

At first, these reformers were able to command only slight attention. Gradually, however, as a result of their prestige as philosophers or educators, they were able to bring about a change in the attitude of society toward children. No longer was the child regarded as a little man or a little woman. No longer was it believed that children could be molded according to a pattern through an educational process designed for that purpose. A new attitude toward children gradually developed, and as a result of this, child study became a reality

Early interest in the study of the child thus came not from an interest

in the child himself but from an interest in the best method of education to develop him into a useful citizen. Nevertheless, as information about the child increased, interest in the study of the child himself increased, and the point of view toward the study of the child gradually changed from an indirect to a direct one. Today, the latter point of view definitely predominates.

EARLIER SYSTEMATIC STUDIES OF CHILDREN

Tracing through the history of child study which eventually developed into the science of child psychology, one can see definite periods in which a specific type of study predominated and later gave way to a different type of study, with emphasis on a new technique. From the time of the Renaissance to the present, there has been a growth of interest in the child and a transition from casual observation, primarily educational in interest, to planned and highly controlled experimental studies centered on the child as an individual, not as an educational problem.

In order to show how child psychology has developed through progressive stages, each century, beginning with the seventeenth, will be sketched briefly to show what it contributed to the study of the child. A few of the outstanding exponents of child study, together with their contributions to the field of investigation, will be recorded to show who were the forerunners of our modern child psychologists.

Seventeenth Century

The beginning of scientific child study dates back to the work of the famous Slavic educational reformer, Johann Amos Comenius, who published in 1628 his *School of infancy*, describing the type of education suitable for the first six years of life. The book was meant primarily for noble and wealthy families who wanted to bring up their children properly, and its influence was limited to those who could read. In 1657, Comenius published *Orbis pictus*, or the *World in pictures*, which is generally looked upon as the first picture book for children. The reading matter was illustrated with pictures to make it more understandable to the child. This was the first practical recognition of the fact that the child comprehends objective facts before he can understand abstract terms.

Historically, the work of Comenius is very important because this was the first time that the child was studied as an individual. Furthermore, it was the first attempt to educate the child according to his abilities rather than to mold him into a socially acceptable pattern as had been done in the past. Comenius stressed the fact that the child is not a miniature adult and therefore should not be treated as an adult but should

be studied in his essential child nature so as to understand his capacities and know how to deal with them. This marks the true beginning of child study.

Eighteenth Century

There were two definite trends in child study during the eighteenth century. The first consisted of philosophical studies of education in which the child was studied only indirectly. The second was a direct study of the child through daily observations of one or more children. The influence of the philosophical studies was great, so far as educational reform was concerned; but relatively little knowledge of the child was obtained from them because the emphasis had been placed on the school rather than on the child. Observations of children in the home, without reference to schooling, proved to be far more fruitful because they focused attention upon the child himself.

Toward the end of the seventeenth century, in 1693, John Locke of England extolled natural methods as opposed to the disciplinary ones used in the education of children at that time. More than half a century later, Jean Jacques Rousseau of France, in his *Émile*, published in 1762 (1911),[1] described at length the application of his ideal of political freedom to the education of the child. Later came the educational reforms of Pestalozzi in Switzerland, and of Herbart and Froebel in Germany. Froebel, considered the founder of the kindergarten movement, summing up his ideals of education in his *Education of man*, published in 1826 (1887), based his materials on his careful observations of young children both at home and in school.

In the latter part of the eighteenth century, an interest in studying the child, aside from his education or home influences, made its appearance. Pestalozzi's notes, based on observations of the development of his 3½-year-old son, which appeared in 1774, may be looked upon as the first scientific record of the development of a young child. Several years later, in 1787, a German physician, Tiedemann, published his observations of the development of his own children during the first years of their lives. This study [now translated from the German by Murchison and Langer (1927)] was one of the first attempts to make a series of scientific observations on the behavior of young children. These two were forerunners of the biographical studies of children which became so popular during the nineteenth century.

Nineteenth Century

During the early part of the nineteenth century, there was little interest in studying children. The result was that no real advance was

[1] Dates in parentheses refer to items in the Bibliography, pp. 599–652.

made for more than 50 years. Then, during the latter part of the century, came a long succession of baby biographies, beginning with Taine's *Infant development* in 1876, emphasizing the child's acquisition of speech. One year later, in England, Darwin (1877) published his *Biographical sketch of an infant.*

Of all the baby biographies published abroad, Wilhelm Preyer's *Die Seele des Kindes* (The mind of the child) (1888), which appeared in 1881, is the outstanding contribution to the development of scientific child study. Preyer was a German embryologist who studied fetal chicks, rabbits, and guinea pigs. He also made systematic daily observations of his son from birth through the third year, with special attention to reflexes and the more elaborate forms of behavior that appeared later, taking extensive notes at the time the observations were made and later writing the biography from them. Comparisons revealed that animals and human infants show similar trends in development, especially in acquisition of control over the muscles. The real importance of Preyer's work lay in the fact that it served as a model for later research by directed observation and also paved the way for the development of more purely experimental techniques. For this reason, Preyer is often called the "father of child psychology."

America contributed its share of baby biographies. One of the earliest was made by the philosopher Bronson Alcott, father of Louisa M. Alcott, the author of *Little women.* He kept a record of the development of his eldest daughter, Anna, from the time of her birth and published this record in 1831. One year later, in 1832, he published a diary record of another daughter, Louisa, which he called, *Observations on the vital phenomena of my second child.*

The best known as well as the most thorough of the American baby biographies to make their appearance during the nineteenth century were Millicent W. Shinn's studies *Notes on the development of a child,* published in 1893 (1909), and *Biography of a baby,* in 1900 (1900), based on observations of her niece from birth through the first year. Shinn used Preyer's work as a model and compared her niece with Preyer's son. Following Shinn's study were other baby biographies, notably those of K. C. Moore (1896), D. R. Major (1906), G. V. N. Dearborn (1910), and others. Most of these appeared after the turn of the century.

Hall and the "Child Study" Movement. The second important contribution to child psychology during the nineteenth century came from the interest aroused in the study of the child by G. Stanley Hall of Clark University. Hall is often referred to as the "father of the child study movement" because of the popular interest he aroused by his baby biographies, philosophical and educational theories, and observational

studies of individual children. He gave great impetus to this interest when he published in 1891 his *Contents of children's minds on entering school* (1891).

Through the influence of Hall, the child came to be looked upon as an individual person, and studies of his physical and mental capacities were made without reference to his education. Hall's students carried this point of view away with them when they completed their studies at Clark University, and soon an interest in studying the child himself became the paramount occupation of a group of psychologists and educators. From schools and universities this interest spread to parents in the home.

While it is true that hundreds of studies of almost every phase of child life made their appearance, nevertheless, because of the poorly controlled and, in many instances, nonscientific methods used, these studies have long since lost their value as sources of information. However, they served as the basis for the first textbooks in America and, as such, played a very important role until they were gradually supplanted by experimental studies. Their important and lasting contribution lies in the interest they created in the study of the child.

Child Study Societies. As a result of the widespread popular and scientific interest in the study of the child, child study groups, scientific journals for reports on the study of different aspects of the child's development, and organizations to promote the well-being of the child came into existence. In 1893, at the time of the International Conference on Education, held at the Chicago World's Fair, Hall organized the National Association for the Study of Children, the first child study society in America. In the following year, 1894, a Department of Child Study was organized as a department of the National Education Association. Iowa, Illinois, Nebraska, and Kansas, in quick succession, formed child study associations. The movement spread abroad and resulted in the establishment of societies in England in 1894, in Poland in 1897, in Germany in 1899, and in France in 1901. The first International Congress for Child Study was held in Berlin in 1906.

Child Study Periodicals. Interest was furthered through the establishment of the *Pedagogical Seminary* by Hall in 1891. In this journal appeared articles dealing with every aspect of individual development. The questionnaire method, popularized by Hall, resulted in the rapid accumulation of material relating to different phases of the mental life at all ages. Two years later, Sully, the founder of the British Association for Child Study, began his *Studies in Childhood* series which, in many respects, resembled Hall's *Pedagogical Seminary*. Following this were the *Child Study Monthly* in 1895; *Die Kinderfehler*, a German journal, in 1896; the *Paedologist*, in England, in 1899; the *Journal of Adolescence* and

Die Kinderseele in 1900; and *Bulletin de la Société libre pour l'étude psychologique de l'enfant* in France in 1901.

Child Welfare Organizations. The late nineteenth century could boast of the beginning of a number of enterprises planned especially for the welfare of the child. The first directed public playground was opened in Boston in 1868; the Society for the Prevention of Cruelty to Children was formed in 1875; the first settlement house for children was established in New York City in 1887 and the first juvenile courts appeared in Denver, Boston, Chicago, and New York from 1898 to 1900. In 1899, the first book for parent education was published by Florence H. Winterburn, under the title *From the child's standpoint.*

Maladjusted Children. At the same time that an interest in the study of the normal child was developing, an interest in the study of the maladjusted child resulted in the establishment, in 1891, of a clinic in connection with the State School for the Feebleminded at Beverly, Mass. Five years later, in 1896, Witmer founded the Psychological Clinic at the University of Pennsylvania. Here, children who had proved to be problems in school, family, or social life were given aid and guidance. In the same year, the Psychiatric Institute was founded in New York City. This marked the beginning of interest in the maladjusted and mentally deficient children which has developed into one of the outstandingly important aspects of child psychology during the twentieth century.

Contributions of Evolution. The evolutionists of the nineteenth century did much to stimulate an interest in child study. In order to support their hypothesis that man has evolved from animals, they eagerly seized upon any evidence they could get from the study of children to prove their point. They regarded the baby as the missing link between animal and man, and they stressed the fact that in his development the child recapitulates, or passes through successively, the different stages of animal life. The grasp reflex, for instance, usually known as the Darwinian reflex, was looked upon as a survival of prehuman days when the infant clung to the mother or to the branch of a tree for survival. They claimed that the crawling of the baby recapitulated the fish; creeping, the quadrupedal stage of mammals; and running, the savage stage of man.

Twentieth Century

The twentieth century has sometimes been called the "century of the child." More has been written and more serious studies of the child have been made during the present century than during any similar period in the history of the world. At times, the subject has assumed

such importance that it is fair to say that the home and school revolve around it. The first few years after the turn of the century were marked by a still wider spread of the popular child study interest. With the establishment of an institute at Iowa State University in 1917, a new scientific trend was added.

The effect of the early child study movement in America was fourfold: (1) It emphasized the individual rather than the school as the focal point of interest in study; (2) it stressed the importance of the early years as the foundation for mature personality development; (3) it pointed out the need for more definite, reliable, factual knowledge about children; and (4) it brought about a realization of the need for more controlled, more analytic, and more accurate methods.

Baby Biographies. Baby biographies, which had played so important a role in arousing interest in child study during the latter part of the nineteenth century, continued to appear in the early years of the twentieth century. Outstanding ones were those of Major (1906) and Dearborn (1910) in America, and in Germany, the *Psychology of early childhood* by William Stern, published in 1914, and based on notes made by Stern and his wife from observations of their three children. One of the latest baby biographies was made by Brainard (1927) in 1927. It supplemented observations of the author's daughter with information from tests of the Gesell, Kuhlmann, and Terman series given to children in clinics.

Influence of Freud. The influence of Freud in emphasizing the importance of childhood is far greater than is generally recognized. In an attempt to discover the causes of adult maladjustments, Freud delved into the childhood experiences of his patients. When he found that, in a large majority of his cases, adult maladjustments were directly traceable to unfortunate childhood experiences, he concluded that childhood is the foundation period of life, during which time favorable or unfavorable personality traits will be established.

Freud's emphasis on infant sexuality and the thwarted wishes of childhood which give rise to children's dreams likewise focused attention upon the importance of the childhood years. This acted as a challenge to motivate observations of children to prove or disprove the Freudian theories. As a result, new fields of investigation of child behavior were opened up.

Twentieth-century Trends. Child psychology has not grown uniformly. When a promising method of research is discovered, or when statements are made which are challenged by other investigators, many workers in the field turn their attention to this area. Temporarily, then, other areas remain relatively inactive. The result has been that

certain problems relating to the child's behavior have been extensively investigated, while others, equally important, are practically unexplored.

Certain definite trends in the study of the child have appeared during this century. Of these, we shall touch on five, each of which has contributed heavily to the development of the science of child psychology.

1. There has been a marked advance in the *methods used in the study of the child.* In contrast to the earlier type of study in which one individual was used as the subject, the recent trend has been to analyze the behavior of large numbers of children, studied singly or in groups. Carefully planned and controlled techniques are replacing the simple biographical notes based on observations made under controlled conditions.

The pioneer work of John B. Watson (1925, 1925*a*) and his collaborators at the Phipps Clinic in Baltimore, beginning in 1917, is historically very important because it introduced new experimental techniques. In his study of the newborn, Watson used the observational method of investigation, which had proved its merits in the study of animals, which, like the newborn infant, could not be studied by the usual psychological technique of introspection. Following this, Watson worked out a modified form of the conditioned-reflex technique and demonstrated its practicability in the study of fear responses in the young child. Soon, experimental studies of children following closely along the lines of Watson's work appeared both in America and abroad.

2. The second trend of importance in child study during the twentieth century has been the development of interest in *specialized studies of the different capacities* of the child. No longer are the studies of a general sort as they were during the preceding century, as in the work of the baby biographers. Highly specialized investigations of learning, motor development, the emotions, language, socialization, play, drawing, moral and religious concepts have replaced them. The result has been a marked increase in more definite and factual information about the aspects of child life studied. The emphasis has not been evenly distributed; certain phases of child development, especially motor control, speech, emotions, and socialization, have been thoroughly investigated while other phases, equally important but more difficult to study, such as moral and religious concepts, dreams, play interests in the older ages, and curiosity about sex matters, have received too little attention. Yet, where the advances have been made, they are genuine achievements.

3. A third important trend in modern child study has been *the testing movement.* Beginning with the development of a standardized scale of tests for the measurement of general intelligence by Alfred Binet and

Th. Simon in Paris in 1905, with subsequent revisions in 1908 and 1911, there was a long series of revisions and modifications of the original scale here in America by Goddard, Kuhlmann, Terman, Yerkes, Pintner, and many others. Following this has come the development of personality and special-aptitude tests, most of which are still in a semiexperimental stage and are designed primarily for children of six years of age or older.

Interest in testing has led to the study of *individual differences*, primarily sex, race, and social status differences, and to an investigation of such problems as the rate of growth of intelligence, and the constancy of the intelligence quotient over a period of time. Academic as they may sound, the findings of these studies have been used in a practical way in planning the school curriculum, in the placement of pupils in grades best suited to their abilities, and in vocational guidance and training.

4. Interest in the *maladjusted child* is the fourth important line of research which has engaged the attention of the child psychologist during the twentieth century. The intelligence test, originally designed by Binet to segregate children mentally too deficient to be able to do the work of the school grade in which they were placed, has proved to be a very valuable method of picking out children unsuited to the work of the regular school grades. These children are today placed in ungraded classes or institutions where the work is planned to meet their needs and capacities.

Children mentally normal but maladjusted to home, school, or social environments because of unfavorable training have likewise received increasing attention. Clinics modeled along the lines of that of Witmer have been opened in many of the larger cities and universities. Attention was centered on children with behavior deviations, and a well-rounded study of their physical, mental, and social development was made for the purpose of correcting undesirable behavior. In 1921, Thom opened a habit clinic for preschool children in Boston, which was the pioneer in its field. Instead of waiting until maladjustments develop to the point where they become serious problems, clinics of this sort are designed to nip the tendency in the bud.

Children maladjusted to normal child life because of their very superior intelligence have likewise received considerable attention from such psychologists as Lewis M. Terman at Stanford, and the late Leta S. Hollingworth. The result of such studies has been the establishment of classes specially designed for the child of very superior intellectual ability and the planning of a curriculum adequately adjusted to his needs.

5. The latest trend in the study of the child during the twentieth century is *intensive research on the preschool child.* With the exception of

the scattered biographical studies of babies and young children, the psychologist has, until recently, found himself in a position where it was almost impossible to study children under the age of six years, the beginning of the school age. This was due to the practical problem of

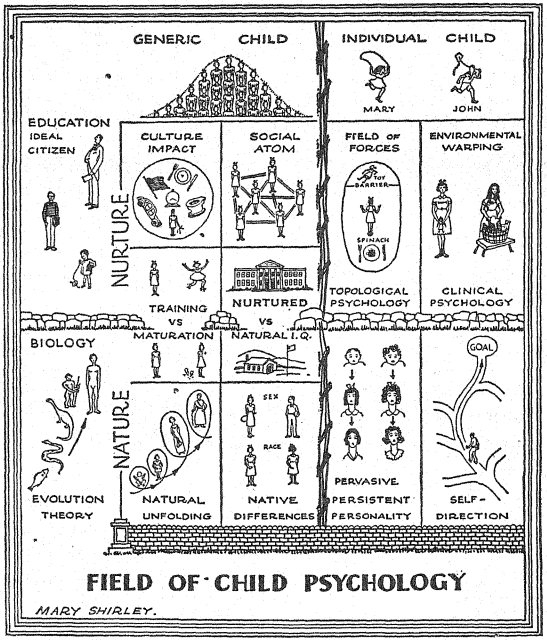


FIG. 1. The field of child psychology, A.D. 1939. (*From M. Shirley, in J. P. Guilford, Fields of psychology, Chap.* IV. *Van Nostrand*, 1940. *Used by permission.*)

getting hold of young children, except in the case of an occasional orphanage group.

Since the First World War, interest in the preschool child has developed rapidly. Nursery schools, kindergartens, and infants' health and mental hygiene clinics, as well as centers for research with preschool

children connected with many of the large universities, have all made it possible for the psychologist to have at his disposal adequate numbers of the very young children for study. The result of this has been a tremendous flood of literature reporting experimental investigations of almost every aspect of development of the preschool child. As a consequence, instead of being one of the least understood of all the developmental ages, the period from birth to school entrance is today one of the most thoroughly investigated and best understood.

Different child psychologists view the child from different angles, depending on their own point of view or interest. Shirley has illustrated this well in the accompanying diagram (Fig. 1).

Here Shirley shows the four major divisions of the field of child psychology today, depending upon the point of view taken by the psychologist. In the nature-generic quadrant, the "generic" child is representative of the average as determined by a study of many children. The point of view is that the child is swept to maturity by the dynamic forces of nature. This has led to an emphasis on such topics as the developmental process, age norms, individual differences, and limits of growth. In the nurture-generic quadrant, the influence of environmental forces and culture on the child's development is stressed. In the upper and lower right quadrants, the "individual" child, meaning the specific, flesh and blood child, is the center of interest.

HANDICAPS TO STUDY OF THE CHILD

From the brief historical sketch given above, it should be evident that delay in the development of child psychology of a scientific character was not due to lack of interest, but rather to handicaps, primarily social, over which the scientist had little or no control. The most important of these handicaps were:

1. The Attitude of Society toward the Child. Until very recently, the child was regarded as a *miniature adult*, and as such was assumed to be like an adult in physical and mental make-up. Throughout the eithteenth and nineteenth centuries, the theory that the child simply was a pint-sized adult was so popularly held that it had a pronounced influence on every phase of child life. Children wore clothing that reproduced in cut and style the clothes of their parents. Everyday activities, even play, were modeled along the lines of adult activities. Religious and moral instruction suited to adult understanding was given to children for whom comprehension of this instruction was impossible. Even in the psychological laboratories, children as subjects for experimental research were almost unheard of.

The belief that the child is a miniature adult has been broken down

gradually through different sources. Rousseau (1911) tried, in his story of *Émile*, to show that the child is a distinct type of individual. "Childhood," he wrote, "has ways of seeing, thinking, and feeling, peculiar to itself." Comenius, Froebel, Pestalozzi, and Herbart urged much the same as the fundamental principle on which all education should be based. Gradually, with further evidence from later, more modern scientific studies to substantiate the contentions of these early educational reformers, the old attitude toward the child is gradually giving way to a new one. Now, the child is regarded as an individual, different and distinct in make-up from the adult.

2. Difficulties in Securing Children for Scientific Studies. Strange as it may seem, it is nevertheless true that the problem of securing large and unselected groups of children for scientific research has been a troublesome and often insurmountable one. This, until very recently, has been especially serious in the preschool ages. When practically all babies were born at home, newborn infants were almost inaccessible to the scientist for study. Likewise, children who were too young to enter school remained at home or played with small groups of neighborhood children, which also made them inaccessible.

Now, fortunately for the scientist, much of this is changed. Babies are much more frequently born in hospitals than at home, and there is no longer an aversion to having them studied by scientists on the excuse that they are too delicate. Nursery schools, kindergartens, health and mental hygiene clinics, established in connection with schools, universities, and charity organizations, give the psychologist of today an excellent opportunity to study young children.

In place of the antagonism which formerly existed against interfering with the school routine to use school children as subjects for experimental studies, many schools today are willingly cooperating with the scientist, and the problem of studying children of the elementary school years is gradually being solved. It is only during the adolescent years, the high-school and college ages, that the psychologist now has difficulty in getting as many children as he needs. And the difficulty here lies not with school authorities but with the students themselves, who are often reluctant to cooperate freely with the scientist on the grounds that studying them is prying into their private affairs.

3. Lack of Scientists Who Can Handle Children Successfully. In the early days, when psychology was a study taught almost exclusively in colleges or universities by men whose careers had been limited to the college classroom or laboratory, there were few scientifically trained psychologists who knew how to handle children, especially young children, well enough to be able to get normal reactions from them.

Parents and teachers, on the other hand, who were accustomed to being with children and who therefore were able to study their normal reactions, lacked, in most cases, the training that is needed to make a scientific study.

Gradually, this handicap is being met satisfactorily. Men and women psychologists, who are familiar with children and who know how to deal with them, are being encouraged to specialize in child psychology and carry out their research work in that field. In addition to that, parents, nurses, and teachers, who are accustomed to handling children, often work with and under the guidance of trained psychologists.

4. Lack of Methods Suited to the Study of Children. In the first period, when psychology was merely an offshoot of philosophy, the introspective method, in which the subject reported what went on in his mind, was the only one in use. Because young children, especially those in the prespeech or early speech stages of development, were totally incapable of using this method, it became necessary for the psychologist to develop a new technique better suited to the study of the child. Many methods, as a consequence, have been tried out. A number of these have been discarded as inadequate or unreliable. In order to show how serious this handicap has been and how difficult it has been to overcome it, the methods most commonly used in former years as well as today will be analyzed here briefly, and their good and bad qualities given.

Child Study

METHODS AVAILABLE FOR STUDY OF THE CHILD

1. Anecdote or "Armchair" Method. This is the oldest of the methods used to study the child. It consisted of a theoretical analysis of the child's behavior, based on previous observations, usually of a casual, desultory sort, made by the philosopher. Plato, in the fourth century B.C., used this method first in his analysis of the ideal education for the child, as discussed in *The Republic.* Many philosophical theories of children have appeared since Plato's time, especially at the time of the educational reformers of the eighteenth century. Two outstanding examples of these are Rousseau's *Émile* and Locke's *Essay on human understanding.*

The great criticism of this method is that it is speculative and lacks basis in well-verified evidence. Instead of studying children directly, one draws on his memory of childhood experiences and on anecdotes he has heard about children. Little attempt is then made to substantiate the conclusions drawn by direct observations of children themselves.

2. The Biographical Method. The baby biographers of the nineteenth century developed their own technique of studying children, which consisted of a day-by-day recording of events in the life of a child,

supplemented at times by simple experiments on one or two children. Instead of relying on memory to supply data in regard to children's behavior, the biographer took down notes at the time he observed the child or shortly afterward. These notes later served as material for the completed record of the child's development.

While this method made it possible to observe the child in his everyday environment, free from the artificiality which is apt to accompany a laboratory study, nevertheless, this very lack of control over the environment made the observations less accurate than a scientific study requires. In addition to this, the impartial, unbiased attitude of the scientist was, in some instances, influenced by parental pride. Finally, as studies were generally limited to one child, usually the child of highly educated, intelligent parents, it was impossible to draw any generalized conclusions concerning the behavior of the *average* child.

In spite of these limitations, the method has its good points. It has proved to be an excellent supplement to laboratory studies of children and has paved the way for carefully controlled observations under conditions similar to those of the home or playroom. Its greatest value lies in the fact that it supplies data about child behavior not found in experimental studies which are, for the most part, limited to short observation or test periods. This is especially important in the early years of life when the child's behavior is spontaneous and cannot be elicited at will.

Recently a few attempts have been made to use the baby biography material, while at the same time eliminating many of the sources of criticism inherent in it. Dennis (1936) compiled a biography from 64 biographies of babies under three years of age. Later, Dennis and Dennis (1937) took data about the first year of life from 40 of the most complete biographies available and obtained information about 50 items of behavior. In this way, the criticism that data given in a biography are characteristic of one child alone has been eliminated. Hurlock and McHugh (1936), to see whether data from baby biographers agree with data from other sources, compared a number of items from biographies with Mead's group of feebleminded children, Terman's group of gifted individuals, Shirley's unselected group, and norms from baby tests.

3. The Autobiographical Method. This method is often referred to as the "retrospective method" because it involves looking backward by the individual over the course of his life, in an attempt to piece together childhood memories into a more or less complete life history. It resembles the biographical method in that it traces the development of the child with emphasis on certain outstanding characteristics. But, unlike that method, it uses material related to the life of the biographer himself, rather than to that of others who have been observed by the biographer.

How this method may be used is illustrated by Laird's (1923) study of incentives. Laird asked a group of students to think back to their high-school days and to recall, in a manner as impartial as possible, the effect that different incentives used by their teachers had had on their work. In a like manner, Hurlock and Klein (1934) attempted to study adolescent "crushes" by asking high-school, college, and medical-school students to answer certain questions about their "crush" behavior and attitudes of earlier years. The adolescent's memories of his preschool experiences have likewise been investigated through retrospective reports collected by Dudycha and Dudycha (1933).

The sources of error in the autobiographical method are great. Relying upon memory is always subject to error, and this is especially true when a personal experience, colored by pleasant or unpleasant emotional accompaniments, is involved. Nevertheless, material derived from the use of this method, in spite of its inaccuracies, is often valuable because it throws light upon certain aspects of child life which can be studied in no other way.

4. The Questionnaire Method. This method, which has been one of the most extensively used in the study of the child, is a large-scale reproduction of the biographical method. Its original purpose was to collect large masses of data relating to the topics investigated and thus eliminate, to a certain degree, the unreliability of the limited data obtained by the biographical and autobiographical methods.

At first, this method involved asking questions orally of each child studied. Because this proved to be too slow and laborious, it was modified to permit groups of children to write, as part of their classroom work, answers to sets of questions or compositions on definite topics. The material thus collected was then studied, tabulated, and recorded statistically, and generalized conclusions were drawn. In recent studies, the questionnaires have been printed and circulated widely among students, teachers, and parents.

The pioneer investigation of importance, using this method for child study, was G. Stanley Hall's (1891) *The contents of children's minds on entering school.* He and four associates asked Boston school children 123 questions about common things in life, as, "Have you ever seen a hill, brook, woods, an island, a river?" "Where does milk, butter, meat, leather, cotton, wool, come from?" Following the model set in this study came further studies by Hall and his students, notably E. Barnes. Such topics as the child's sense of self, children's collections, children's fears, dreams, toys, and playthings were investigated through the use of this method. As a result, much material of value about child behavior was obtained, and many suggestions for further studies with more scientific methods were given.

This method has its good as well as its bad features. It has enabled the psychologist to investigate a broad problem, using many subjects, in a relatively short time. It furnishes valuable cues for further investigations and obtains data from sources, notably parents, that could be obtained by no other method. This latter advantage is well illustrated in a study by Long (1941). Long sent out to parents anonymous questionnaires containing descriptions of 57 types of undesirable behavior and a list of 20 training methods commonly used in dealing with such behavior.

He assumed that parents, because of their continuous opportunities to observe their children, possess valuable information about them which would be difficult or impossible to obtain from laboratory or school studies. While it is true, as he pointed out, that the parents' feelings toward their children and their lack of training in observation techniques may obscure some important issues, they can, nevertheless, report information not available in school and laboratory situations.

But there are many disadvantages which to a large extent offset the advantages. Owing to lack of understanding, the question is often either omitted or answered in a manner unrelated to the individual's point of view. There is no sure way to control the replies given or to be sure that the replies are not falsified to obtain, as many children believe, a higher school grade. During adolescence, there is often a resentful attitude toward what the adolescent believes to be prying into his personal affairs, and this leads to giving evasive answers or, in some instances, obviously untrue answers.

Pyles, Stolz, and McFarlane (1935) investigated the accuracy of facts concerning children's early development when reported by mothers one or two years after the developmental period was over. They compared mothers' reports when 252 children of the Berkeley Survey were twenty-one months old with earlier records of the same developmental period. These records were based on data obtained by trained workers at the Institute of Child Welfare of the University of California.

Mothers' reports of when their children first walked alone were correct in 49 per cent of the cases, and the ages given for the appearance of the first tooth were correct in only 36 per cent of the reports. Mothers, they reported, tended to err in the direction of suggesting precocity. Mothers with several children showed a greater tendency to err than did mothers with only one child.

5. The Psychometric Method. The psychometric, or testing, method of studying children consists of grading their behavior by means of a standardized test procedure. Following the pattern set by Alfred Binet in 1905, intelligence tests for all ages have been developed. Later, personality and special-aptitude tests, modeled along the lines of the intelli-

gence tests, made their appearance. While these latter tests are better suited to the high-school and college years than to the elementary-school age, nevertheless, some data of value concerning the personality make-up of children have been derived from their use.

One chief value of the psychometric method is its accuracy, which comes from emphasis on carefully controlled environmental conditions. This very fact, however, often results in an artificial situation, which produces an unfavorable emotional reaction that reduces the accuracy of the measurement.

6. The Method of Individual Diagnosis. This method, a modification of the method used by the Freudian School in the study of adults, was first used by Witmer in the Psychological Clinic founded by him at the University of Pennsylvania in 1896. Modifications of the technique worked out by Witmer are used in habit and child-guidance clinics and are limited to the study of the maladjusted child. Case studies, with careful attention to detailed analysis and comparison with so-called "normal" cases, have made this technique better than that of the earlier work in the same field.

Play therapy is today one of the most widely used modifications of individual diagnosis. Anna Freud, daughter of Sigmund Freud, first used play to get acquainted with her child patient, to gain his confidence, and to make herself liked by him. Later it became apparent that, since children mimic what they see or hear around them in their play, one can get a glimpse of the personal life of the child by watching him at play.

Because children are more likely to express themselves freely in acting than in talking, the child's free play may give a clue as to what is at the basis of his problem behavior. Amster (1943) has listed a number of uses of the play technique, the most important of which are these:

1. Play can be used for a diagnostic understanding of the child.
2. Play can be used to establish a working relationship between the child and the adult.
3. Play can be used to help a child to verbalize certain conscious material and the associated feeling.
4. Play can be used to help a child to act out unconscious material and to relieve the accompanying tension.

Weiss-Frankl (1941) has maintained that, by going through various experiences with a child in a play interview,

> one is gradually able to get a many-sided picture of him—of his likes and dislikes, his sensitivities, his abilities and shortcomings, his picture of the world as disclosed by the content of his conversation and activities, his questions, and the problems he sets for himself. One learns what tends to upset him, what gives him security, and what he seems to avoid or pursue. The result is more than an inventory. It is a live portrait of the individual, developing child.

Conn (1939*a*) has described in detail how the method provides an opportunity for the child to express his thoughts and feelings through dolls representing members of his family. Conn has explained the value of this method by saying that the attitudes, motives, and imaginations of the child, as shown in his play, are closely associated with his life situations and actual experiences. Facts thus obtained are relatively free from adult interpretation, thus making it possible not only to understand the child better but to help him to correct distorted attitudes.

The newest form of play therapy consists of manipulation of constructive materials, such as sand, water, paints, clay, and paper. The child can project his feelings and emotions into these while at the same time getting satisfaction from his achievements. Elkish (1945) has studied children's free art work; Alschuler and Hattwick (1947), easel painting; and Arlow and Kadis (1946) have suggested the use of finger painting for the same purpose.

In order to deal with problem children, the psychologist must obtain extensive information about the child studied. Case histories, composed of information regarding the personal and family history of the child, a developmental history, a record of physical condition, and information about his mental and emotional development, as well as a school record, all serve to give a more or less complete picture of the child. In order to obtain this material, the psychologist gets information from parental interviews, home visits and ratings, teachers' judgments, school tests and records, mental measurements, and from his own observations of the child's behavior. A typical example of such a case history is that of *Agnes*, made by Woolley (1925).

The method of individual diagnosis may be looked upon as one of the most accurate available today for the study of the child. It is limited in its use, however, to a group of highly trained psychologists who are familiar with maladjusted children and who know how to deal with such cases. It is a method which requires infinite patience and unlimited time to make possible a careful study of the child. As its main emphasis is on problem cases, it is generally reserved for the study of the problem child rather than the normal, average child.

7. The Controlled Observation Method. This method consists of the observation of the behavior of the child under carefully controlled environmental conditions. It is an outgrowth of the biographical technique, which has been made more accurate by using groups of children, instead of a single child, by keeping environmental factors under control, and by eliminating the subjective factor as much as possible through the use of outlines, questionnaires, and record blanks to guide observation, and by taking moving pictures to supplement the observations. How carefully controlled the observations of children can be may be seen in the

"isolation cabinet," designed for infant research at the Ohio State University. In it temperature, humidity, light, and sound are controlled.

The controlled observation method was first used in Germany in the studies of the reactions of the newborn to sensory stimuli. With the continuation of the use of this method, it has been improved to the point where its scientific accuracy is greatly increased. Watson (1925) at Johns Hopkins University in Baltimore used this technique for the first time in America in his experiments on the emotions of the newborn.

At Yale, Gesell (1932, 1935) introduced the moving-picture camera as an aid to observation of young children in 1926. He used the 24-hour observation technique in which the baby's behavior is observed and recorded continuously for every minute of the 24 hours of the day. The observers who record the responses are kept out of the behavior picture by means of a one-way-vision screen so that the baby may be observed while at the same time he is unable to see the person who is observing him, thus eliminating distractions to normal behavior (see Fig. 2). In addition to this, the use of the moving-picture camera, as a means of recording accurately every movement made by the baby, together with stenographic notes of the observations, taken simultaneously by several observers, have added to the scientific accuracy of the technique.

Gesell (1935) has shown how valuable information about selective phases of behavior, such as standing or rattle behavior, and minute pattern phase analysis of the head, eyes, mouth, or fingers, can be obtained from slow-motion study. When stenographic notes of the observations of several observers, taken simultaneously, are combined with motion pictures, the scientific accuracy of this technique is greatly increased.

Bühler (1930), in Vienna, has used the same method of continuous systematic observation of babies under conditions normal to everyday life. Barker (1930) and Loomis (1931) have worked out a technique for the study of reactions of nursery-school children to objects and to people. To date, this method has been limited in its use to the study of the younger age groups.

With the control of the environmental conditions as well as of the stimuli applied to the child, plus careful observations made simultaneously by several trained observers and recorded immediately in shorthand notes, there is an accuracy to this method which is not found in the more or less haphazard recording of observations on the part of those who made the early biographical studies. The impersonal scientific attitude of the observers contrasts markedly with the personal and often prejudiced attitude of the biographers.

The criticism most often raised against this method is that it places the child in an artificial environment, and consequently his behavior

tion at different ages. Are the children selected for a five-year-old group, for example, nearly enough like those selected for the six-year group so that the measurements of the six-year group would be similar to those that might be made on the five-year group one year hence, and therefore could justifiably be substituted for them? Or, putting it in another way, will a given group of five-year-olds show, with retests year after year, the same physical and mental development that one finds in a number of different groups of different ages, taken to represent the "norms" for those ages? As no one has ever subjected this question to scientific investigation, adequate in scope to affirm or disprove it, the method is open to criticism as an approach to the investigation of development.

If it is to be used at all, it must involve very large and very widely selected groups for each age level. No less than several thousand children at each age level should be used, and the sampling should not be taken from one community, or a part of a community, but from a cross section of a state or a nation. Only when large, random samplings are used can one have confidence in the results obtained from this method.

Reexaminations. The *second* method of investigating development consists of the reexamination of the same individuals, at certain intervals, day after day, month after month, year after year. This is, of course, a more arduous task and requires far more time than the cross-section technique just described. But because it involves the study of the development of the same individuals, rather than of different ones at each age level, there is justification in believing that it gives a more accurate picture of the typical child's development. And because preliminary studies made by this method have shown that the course of development for normal children is approximately the same for all, it is not essential that such very large groups be used. This offsets some of the complications that arise in the practical application of this method, especially that of getting all of the same children for reexamination year after year.

In the study of development of general intelligence, Terman and others have used the reexamination technique to see what changes occur in the child's intelligence year after year. Also, in his study of 1,000 boys and girls of "genius" intelligence, Terman (1926) traced their physical, intellectual, and social development from kindergarten to college and, in some cases, after they had established themselves in business or professions. Gesell (1930) at the Yale Psycho-Clinic has reexamined over 100 babies month after month. From data thus obtained, he has established "developmental norms" of behavior for the different ages. In studies of prehension of a small sugar pellet, for example, he found that successive stages of grasping came at approximately the same ages

and in the same order in different children, thus giving a picture of patterned behavior of a consistent type.

Shirley (1931*a*) followed, through repeated examinations at frequent intervals over a two-year period, the development of 25 babies. The purpose of doing this was to see if certain traits were transitory or constant over this time and to trace the course of development. She then compared the results obtained with baby biographies and with babies studied by Bühler, Burnside, Gesell, and Jones. She found that motor development in little children followed a pattern in which five "major orders" were apparent. Burnside (1927) used a similar technique in the study of walking, and Halverson (1931) in the study of prehension. The results of these studies will be presented in the chapter on Motor Development.

RATES OF DEVELOPMENT

Variations in Rate. Development, whether "physical" or "mental," is not a uniform process in which equal amounts of growth take place annually each successive year. For one thing, it is extremely rapid during the prenatal period, when the individual grows from a microscopically small germ cell to an infant weighing approximately 8 pounds and about 20 inches in length. At birth, the baby is three-tenths of his height at the age of eighteen. In other words, in nine months his growth is approximately one-third of what it will be eighteen years hence.

This accelerated rapidity of development continues throughout babyhood, to the age of three years, except for the first two weeks immediately following birth, when a "plateau" stage occurs during which the newborn infant is becoming accustomed to his new environment. To realize how rapidly the changes have occurred, all one has to do is to compare a three-year-old with a newborn infant. During this period, one can almost see the baby grow. Moreover, the physical development is closely paralleled by an equally rapid mental development.

From three to six, the growth rate continues to be rapid, though not so rapid as in the preceding three years. From birth to five years, growth equals that of the years five to fifteen. But, toward the age of six, growth begins to slacken, and from then until just before adolescence, the rate of development is somewhat retarded. Then, in preadolescence and early adolescence, at approximately twelve to fourteen years, the rate of development is once more accelerated, only to slow down again in two or three years as the individual approaches the level of maturity.

Or, to compare six-year periods: the rate of development during the first six years is proportionally three times as great as during the next two six-year periods. In general, the third of the six-year periods, which begins during the adolescent years, is the slowest from the point of view of rate of development.

Factors Influencing Rate of Development. While it is true that the limit of the child's physical and mental development is determined by the structure of the germ cells from which he has developed, nevertheless, the activity of the child, plus such environmental factors as food, exercise, and education, influence the rate and extent of the changes as the child approaches the limit of his development. Medical studies have shown that the nutrition in babyhood is influential not only in growth changes but also in the final degree of development attained.

The rate of development of the child can be modified by speeding up the growth process, by reducing the rate of development, or by altering the form or sequence of the pattern through manipulation of the factors involved in the growth process. The use of gland treatment will illustrate this fact. Gonad treatment will speed up the puberty changes of adolescence; while deficiency of thyroxin that is responsible for delayed physical and mental growth can be compensated for by introducing thyroxin into the body, thus accelerating the growth to the point that it closely approximates the norm.

CAUSES OF DEVELOPMENT

Maturation. Development of the physical and mental traits of the individual is partly the result of an intrinsic maturing of those traits, and partly the result of exercise and experience on the individual's part. By *maturation* is meant the development or unfolding of traits potentially present in the individual, because of his hereditary endowment from his parents and other ancestors. While not directly dependent upon the child's experiences, it is stimulated and influenced to some degree by the different environmental factors with which he comes in contact.

The appearance of a trait through maturation is frequently characterized by a striking suddenness. During the pubertal changes preceding adolescence in the male, hair appears on the face and the voice changes from high to low pitch in the short span of a few months. While these physical changes are taking place, there is a sudden change in attitude toward members of the opposite sex, which results in a "boy-crazy" or "girl-crazy" interest as opposed to the aversion to members of the opposite sex which formerly existed. Or, again, in the development of the ability to walk, one of the most characteristic aspects is the sudden appearance of each successive stage, often after one had believed the child would be far behind the usual age for attaining this particular skill.

Learning. Development likewise is brought about partly by a second cause, which results from the activities of the child himself. This type of development is generally referred to as "learning" because it requires exercise to bring about changes in the physical structure and behavior of the individual. Not all learning is of the same type. It may result from

practice or the mere repetition of an act which, in time, brings about a change in the individual's behavior. Or, it may come from training, which is a selective, directed, and purposive type of activity. Whether it be caused by practice or training, the changes which take place in the child's behavior are due to the activities of the child.

Interrelation of Maturation and Learning. Maturing and learning are not separate and distinct causes of development, as the discussion above may suggest. As a matter of fact, they are closely interwoven, and one influences or retards the other. Without effort, traits potentially present will not develop to their maximum, while with effort, properly directed and applied at the time when those traits should normally begin to mature, the development will be more nearly complete. If, on the other hand, a trait is limited in its potentialities for development, no amount of effort or exercise on the individual's part will be adequate to bring it up to a desired standard.

Maturation provides the raw material for learning and determines to a large extent the more general patterns and sequences of the individual's behavior. As the body structure changes and matures, behavior dependent upon it appears. It is an error to suppose that maturation is limited to the prenatal and learning to the postnatal periods of the individual's life, for some learning takes place before birth just as some maturation occurs after birth. It is true, however, that development during the prenatal period is due mostly to maturation and is very little dependent upon exercise.

In an experiment based on the hypothesis that as a child matures he becomes competent to learn tasks of increasing complexity, Morgan and Morgan (1944) tested 50 babies at The Cradle in Evanston, Ill. Each baby was given paired presentations of a visual stimulus (hand containing a bulb) and a puff of air from the bulb to determine at what age he was competent to learn a conditioned wink reaction to the visual stimulus.

They found clear-cut evidence that a normal baby cannot learn this conditioned reaction before the age of fifty-four days and that a normal baby of sixty-five days of age can learn it. They found some evidence to suggest that, if the baby is not prepared to learn this conditioned reaction, excessive drill is not very effective in teaching it to him. Maturation, they maintained, is an important factor in determining the baby's ability to learn this simple conditioned reaction.

Learning Must Wait on Maturation. A child cannot learn until he is ready to learn. This is just as true of learning to read or to add as it is of muscle coordinations in throwing a ball or dancing. The necessary physical and mental development must be present before the child can build new skills on these foundations.

Trying to teach a child before he is ready to learn may result in the establishment of unfavorable attitudes, which, in turn, will retard his learning. Of almost equal seriousness is failure to recognize the fact that learning readiness is present. When the child is not permitted to learn, even though ready, his interest is likely to wane. Later, when he is expected to learn, his interest may have reached such a low ebb that he will be unwilling to put forth the effort needed for successful learning.

How, you may wonder, can one determine when the child is ready to learn? There are three criteria which are generally used to indicate the child's state of readiness. These are (1) what is the child's interest in learning, (2) how sustained his interest will remain over a period of time, and (3) what progress he makes with practice. When the child's interest wanes quickly or when he seems to make no appreciable improvement, in spite of continued practice, there is reason to question whether he is ready to learn.

The experiment carried out by Jersild and Bienstock (1935) furnishes an interesting illustration of the importance of waiting for maturation before teaching is introduced. In this experiment, preschool children were tested to discover their ability for keeping time to music. Growth in this ability, it was found, can be speeded up by training; but a short time after the training had been completed, the group of children that had received no training caught up to the group that had received training. This showed, it was pointed out, that to force learning before the child has the maturity needed in that learning is grossly inefficient.

EXPERIMENTAL STUDIES OF MATURATION

Many experimental investigations of the role played by maturation in the development of the individual have been made. The main purpose has been to discover the relative importance of maturation as compared with learning or, expressed in other terms, how much of the child's development will occur of its own accord, and how much will have to come about as a result of the child's experiences. This is far from an easy problem to solve, and it has been investigated from different angles, with the use of different methods. The most important of the methods are the *method of isolation*, the *method of co-twin control*, the *matched-group method*, and the *genetic study of large groups*, to determine if a pattern of development, similar in outstanding characteristics, is present.

1. The Method of Isolation. The method of isolation for the study of maturation has been used much on animals. The fundamental principle of this technique consists of isolating the young individual from older members of the same species, to see if certain traits of behavior, characteristic of that species, will appear without an opportunity for learning

on the animal's part. Studies of human babies, using the isolation technique, have been very infrequent because of the practical difficulty of getting babies for such a study, and because of the objection raised by parents and others that it is unfair to the child.

Dennis and Dennis (1938) used this technique in the study of a pair of female twins from the end of the first to the end of the fourteenth month of life. The babies were kept in a special experimental room with full experimental control, to enable the experimenters to study the effect of restricted practice on their reaching, sitting, and standing. To eliminate practice in reaching, the babies' hands were placed under a bib or napkin when eating, or under the tightly tucked bedclothes, in cool weather. No bedclothes were used in warm weather. No toys were given to the babies until they were eleven months old. Similar restrictions were placed on sitting or standing, by keeping the babies on their backs in their cribs. These restrictions were planned to eliminate opportunities for the babies to learn and thus to show how much of their development was due to maturation alone.

The results of this study were then compared with data from baby biographies compiled by Dennis (1936) and from material obtained by Shirley (1931*a*) in a study of the development of 25 babies brought up under normal conditions. Dennis found little, if any, retardation in the development of the three activities studied during the first nine months of life. The twins showed behavior very similar to that of babies brought up under normal conditions. After nine months, however, the effects of restriction were noticeable. As soon as the babies were given an opportunity to learn, the abilities appeared with relative promptness. These results indicate, Dennis contended, that reaching, sitting, and standing would not develop without an opportunity for practice and thus are not due to maturation alone. At the same time, the fact that practice brought about quick learning indicates that maturation has provided the necessary foundation for learning.

In a later study, Dennis and Dennis (1938) were interested to see whether the child's behavior would follow its normal course in the absence of such social stimuli as fondling, adult interest, encouragement and discouragement in new actions, and attempts at teaching. The babies' physical wants were cared for, but each received a minimum of handling, reward, and punishment. When their behavior was compared with that of children reared under the usual human environmental situations, as shown by 50 baby biographies, Dennis found that the twins had developed all the typical responses of the first year, such as laughter, timidity, and vocal greeting. This led Dennis to conclude that these activities develop not instinctively but as a result of minimum stimulation from adults.

In the records of the day-by-day observations of twins, Dennis (1941) found 154 developmental items. Practically all of these were developed *autogenously,* or without encouragement or instruction, without reward or example. During the first year of life, *sociogenous* responses, or those which are learned through the intercession of other persons, are few and relatively unimportant. If the well-being of the baby is assured, Dennis contended, his behavioral development will take its normal course.

Furthermore, learning plays an important role in the development of autogenous responses. Except in the case of very few reactions, Dennis maintained, there is little reason to believe that early responses are made up exclusively of unlearned elements. While maturation is a major factor in development during the first year of life, its importance lies chiefly in making learning possible. "Maturation in and of itself," he concluded, "seldom produces new developmental items, but maturation of structures when accompanied by self-directed activity leads to new infant responses."

2. Method of Co-twin Control. The second method of studying the relative importance of maturation and learning in the child's development is the method of co-twin control, used first by Gesell and Thompson (1929). A pair of identical girl twins served as experimental subjects for their study. Twin *T* or Twin Trained was given daily training in climbing steps and handling cubes for six weeks, from 46 to 52 weeks of age. The Control Twin, Twin *C*, was given no training in these two types of behavior during this period. At the age of 53 weeks, however, Twin *C* was given two weeks of training in step climbing. Gesell and Thompson found the climbing performance of Twin *C* at 55 weeks of age far superior to that of Twin *T* at 52 weeks, even though Twin *T* had had three times as much training as Twin *C*. This superiority, they explained, was due to the advantage of maturity.

Twin *C* received no training in cube behavior as contrasted with the six weeks of training given to Twin *T*, but the pattern of behavior was very similar for both. The manner of taking hold of a pellet was shown to be almost identical in photographs of the details of position of hand, posture, and other parts of the body. In fact, in 612 items of behavior observed, 513 showed identical or nearly identical correspondence, while only 99 showed minor disparity.

Similar results were found for *language.* Strayer (1930), using the Gesell and Thompson twins as subjects, gave Twin *T* training in language from 84 to 88 weeks of age. Twin *C* had no training until she was 89 weeks old and was then given training until she was 92 weeks old. During the time, Twin *T* had no training. Strayer found that Twin *C*'s level of accomplishment was higher after 28 days of training than Twin *T*'s after 35 days, but Twin *C* did not catch up to Twin *T*'s accomplish-

ment at the end of the experiment. Delayed training proved to be more effective than early training, because of the groundwork established by the maturing that went on in the interval.

Hilgard (1932), in a follow-up study using the same twins, investigated the relative effects of early and delayed practice in *memory* tests, as digit-memory, object-memory, and in more complex *motor* tests, as ring-toss or errors on walking boards. Twin *T* was given three practices a week for eight weeks while Twin *C*'s practice was delayed three months. Delayed practice resulted in a more rapid gain on most tests for Twin *C*, but, three and six months after practice, the performances of both twins on all tests proved to be similar.

When the twins were 3 years 7 months old, Thompson (1943) studied the effects of training on their play behavior. Twin *T* was trained to channelize her activity and to play continuously with the toy of her choice during 25 training periods, 2 a week, over a period of 4 months. The training was designed to channelize her play, to keep her at whatever task she started, to minimize her activity diversions, and to relate her activities into an organized total. This was done by help, suggestions, encouragement, and denials.

Twin *C*'s play was with identical toys in an identical room, but it was undirected. Scores on the Cushing Test of Perservative Tendency, records of the number of toys played with, and the timed records of free play before and after training showed that Twin *T*'s behavior had been modified as compared with that of Twin *C*. Twin *T* learned to play with her toys in a specific way and her area of attention showed restriction. The effects of training, however, did not persist when the twins played together. After six months of kindergarten experience, no effects of the experimental training were observable.

In 1941, Gesell and Thompson (1941) published a report covering the development of Twins *T* and *C* to puberty, the main purpose of which was to determine the stability of behavior resemblances and differences. The twins were almost indistinguishable in both countenance and physique. Twin *T*'s permanent teeth erupted earlier than *C*'s and menarche arrived sooner. Twin *C* was superior to *T* in fine motor coordination, showing more interest and skill in precise manual tasks. She was more relaxed, more bidextrous, and more given to symmetry of poise and attitude. No marked difference was observed in the rate of mental development. Twin *C* was more talkative, though Twin *T*'s pronunciation was slightly better and her vocabulary slightly larger.

Twin *T* was slightly superior to *C* in adaptivity, while *C* surpassed *T* in sociability and showed more interest in the opposite sex. She was somewhat more popular with her schoolmates and less sensitive to their

opinions than *T*. *T*, on the other hand, spent more time in reading and less in socialized or personalized fantasy.

When Gesell and Thompson raised the question as to whether the twins were more alike in early babyhood than they were 14 years later, they concluded that any differences then existing had been less easily distinguished because of lack of technology for identifying them. With age, evidence of small differences becomes more obvious.

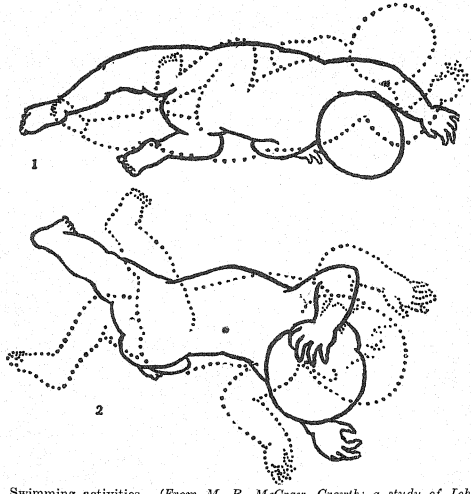


FIG. 4. Swimming activities. (*From M. B. McGraw, Growth: a study of Johnny and Jimmy. Appleton-Century-Crofts*, 1935. *Used by permission.*)

In an attempt to determine the relative importance of maturation and training on phylogenetic functions, or functions common to the race, and ontogenetic functions, which are specific to the individual, McGraw (1935) used a pair of boy twins, Jimmy and Johnny, as her experimental subjects. Johnny was subjected to intensive daily training in a variety of motor skills, which included such *phylogenetic* functions as crawling, creeping, hanging from a rod, sitting and walking, and such *ontogenetic* activities as jumping from pedestals, roller skating, swimming, scaling inclines, arranging boxes to reach a toy, and tricycle riding. Figure 4

illustrates the development of swimming activities. The ontogenetic functions were trained as soon as an appropriate state of development had been attained in the phylogenetic functions. For example, crawling skill was used as the starting point for swimming lessons and walking as a clue for the beginning of training in roller skating. During Johnny's training periods, Jimmy was isolated in a crib behind a screen.

The results of this experiment showed that training in phylogenetic functions gave Johnny little or no advantage over Jimmy. The two showed the same activities at the same time, with Jimmy sometimes ahead of Johnny. In the ontogenetic activities, on the other hand, Johnny was far ahead of Jimmy. Even though Jimmy was given periods of practice after Johnny had acquired considerable skill in the different activities, Jimmy learned only some of the skills and refused to try the others.

In a follow-up study of Jimmy and Johnny, McGraw (1939) found that at the age of six years there was a superiority of general muscular coordination on the part of Johnny, who had received the longer and more intensive practice in motor activities. Jimmy, by contrast, was more awkward and timid.

McGraw (1940) used this same method to study toilet training in two sets of identical twin boys. After the first month of life, one boy of each pair was subjected to a program of being placed on a chamber at hourly intervals during 7 hours of the day. Their twins were not allowed on the chamber until they were fourteen and twenty-four months of age. They were then given the same schedule of training that their brothers had received. The achievement records of the children showed that attainment of bladder control was improved as a result of the training period.

To determine the degree and nature of the influence of training on the development of psychomotor functions of different complexities, and of its effect on the general development of the preschool child, Mirenva (1935) conducted an experiment in the Medico-Biological Institute of Moscow similar to those of Gesell at Yale. Four pairs of identical twins and six pairs of fraternal twins, ages 4 to 4½ years, were used as subjects. The inferior child in each pair of identical twins was subjected to special psychomotor training over a period of 4½ months. The other twin swere kept as controls.

The exercises used in the training consisted of jumping, hitting a mark by throwing a ball, and hitting a mark by rolling a ball. At the end of the training period, the trained and the untrained twins were subjected to examinations, which revealed that the inferior twins now equaled or excelled the formerly superior ones. In so elementary a motor function

as jumping, development was found to proceed very rapidly and was relatively independent of training. Training, however, markedly accelerated the rate of this development.

In the more complex psychomotor functions of hitting a mark by throwing or rolling a ball, the activities were found to depend much less on maturation. They were strikingly changed as a result of training. The trained twins also showed marked alterations in their whole behavior and general development. As a result of training, they became more active, more independent, and more disciplined. The intellectual level of the trained twins rose, while that of the controls remained unchanged.

Mirenva's data proved to be in sharp contradiction to those of Gesell. Using older twins, Mirenva found that where more complex psychomotor functions prevail, training proved to be more important than in the more elementary psychomotor functions found in younger subjects. Maturation, Mirenva contended, plays a less important role in more complex functions than it does in the more elementary.

Criticisms of Method. While the co-twin control method is a good one from the point of view of scientific accuracy and control, there are practical obstacles in the way of applying it, especially after the early years of life. It would be almost impossible to carry out a series of tests on a large number of identical twins because of the difficulty of getting free rein over these twins for experimental studies. Again, because Twin C may be retarded in development by eliminating training, even though it be only along certain lines, it would be difficult to use this method after the early years of babyhood. For that reason, the method of co-twin control may be regarded as practical only during the early years of life and, even then, must be limited to a small number of subjects.

3. The Matched-group Method. Because of the practical difficulties in using the method of co-twin control to study maturation, a third method, the *matched-group method*, has been used. This is an offshoot of the co-twin control method in that it uses two similar groups, matched in traits definitely related to the behavior studied, instead of two matched individuals, as used in the case of identical twins. Like the method of co-twin control, this method studies the relative influence of maturation and learning through the training of one group, while the second group is allowed to develop of its own accord without any opportunity to learn.

Group studies of children have been numerous. Hilgard (1932) carried out an experiment with two groups of nursery-school children, equated for chronological age, mental age, sex, and initial abilities in tests of buttoning, climbing, and cutting with scissors. The practice group was given 12 weeks of practice, while the control group was given only 4 days of intensive practice at the end of the 12-week period. This

proved to be sufficient to bring the scores of the control group up to those of the practice group. It showed that factors other than specific training, such as maturation and practice in related skills, contributed to these three skills. This is well illustrated in Fig. 5, showing the learning curves for buttoning. In an experiment involving ladder climbing, Hilgard (1933) used two equated groups of two-year-olds. The trained group, after 12 weeks of intensive training, proved to be far superior to

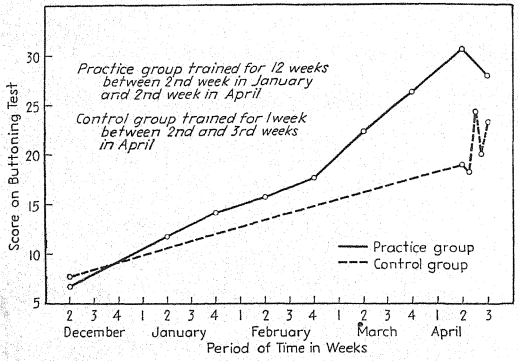


FIG. 5. Learning curves for practice and control groups. (*From J. R. Hilgard, Learning and maturation in preschool children. J. genet. Psychol.*, 1932, **41**. *Used by permission.*)

the control group but the control group needed only 1 week of training to equalize the trained group.

Hicks (1930, 1930*a*, 1931) studied the effect of practice on young children's skill in hitting a moving target. The children in the practice group did not score significantly higher than those in the control group, who were given only initial and final tests. This, Hicks suggested, indicates that improvement in skill is not the direct result of specific practice but comes from such factors as structural maturation and general practice. Jersild (1932) studied the effect of special training in motor, mental, and musical performances in the case of children, two to eleven years old, to see whether special training would raise a child's capacity beyond the level achieved in the normal process of growth. The children who were given practice, he found, showed some advantage over the control group at the end of the training period, which covered several weeks. But they maintained this lead in only one experiment. Thus,

man-hating phase. This they soon outgrow, and in a short time, after emerging into adolescence, they become as man-crazy as they were man-hating before.

Both boys and girls during the elementary-school years are jumpy and find it difficult to sit still for more than a short period of time. This is caused by rapid growth of the large muscles and slowness in learning to inhibit movement. Similarly, during the early years of adolescence, when growth of the hands and feet is proportionally faster than that of the arms and legs, boys and girls go through an "awkward age," which is characterized by stumbling, tripping, dropping things, and being generally uncoordinated in movement.

10. Every Individual Normally Passes through Each Major Stage of Development. While it is true that the time required to complete the development characteristic of each stage differs from one individual to another, nevertheless, except in unusual cases, the development will be completed at approximately twenty-one years of age. Inability to pass through all the developmental stages is correlated frequently with low-grade intelligence. Poor health, unfavorable environment, lack of incentive to develop, and many other factors may also retard the normal rate of development, but their influence is only temporary.

Implications. Knowledge of the principles of development is important for two reasons. First, it helps us to know what to expect and when to expect it. Otherwise there would be a tendency to expect too much or too little of the child at a given age. Both of these are bad. In the former case, the child is likely to develop feelings of inadequacy because he does not measure up to the standards his parents and teachers have set for him. Expecting too little gives him too little incentive, with the result that he does not do as much as he is capable of doing.

The second advantage of knowing how development occurs is that it gives the adult information as to when to stimulate and when not to stimulate growth in the child. It gives a basis for planning the environmental encouragement that must be offered and the correct timing of this encouragement. When the child is beginning to walk, for example, he must be given opportunities to practice walking and the necessary motivation. Absence of either one may delay the onset of walking beyond the time when it would normally occur.

FACTORS INFLUENCING DEVELOPMENT

The rate and pattern of development can be changed by conditions within and without the body. Physical growth depends partly upon food and general health conditions and partly upon such environmental factors as sunlight, fresh air, and climatic conditions. Personality

patterns may be influenced more by attitudes than by social relationships, or the reverse may be true.

As has just been hinted, development is not due to one factor alone but to many, each related to the others and all interdependent. The relative importance of the different factors has never been determined, though it is evident that some play a more important role than others. These factors, listed, as nearly as possible, in the order of their importance, are as follows:

1. Intelligence. Of all factors influencing the development of the child, intelligence seems to be the most important. High-grade intelligence is associated with a speeding up of development, while low-grade intelligence is associated with retardation. Several examples will be sufficient to illustrate this point. The age of first walking and talking has been carefully studied in relation to the intelligence of the child, and the results have been found in Table II.

TABLE II. AGES OF FIRST WALKING AND TALKING

	First walking, months	First talking, months
Very bright children	13	11
Moderately bright children	14	16
Morons	22	34
Idiots	30	51

Sources: TERMAN, L. M. *Genetic studies of genius.* Palo Alto: Stanford Univ. Press, 1926, Vol. 2. MEAD, C. D. The age of walking and talking in relation to general intelligence. *Ped. Sem.*, 1913 **20**, 460–484. Used by permission.

Likewise, the age of sexual maturing, or puberty, is influenced by the intellectual level of the child. Precocious, or "genius," children mature a year or two sooner than average children, while in the case of the mentally deficient, the idiot, imbecile, or low moron grades, sexual maturity either does not occur at all or is retarded in its appearance.

2. Sex. There is ample evidence available at the present time to show that sex plays an important role in the physical and mental development of the child. Differences in the rate of physical growth are especially apparent. At birth, boys are slightly larger than girls, but girls grow more rapidly and mature sooner than boys. Girls, on the average, mature sexually a year before boys and, at this time, they are larger than boys. This is definitely apparent at the prepuberty age, from nine to twelve years. Girls also attain their full size sooner than boys. In mental growth, as measured by intelligence tests, there is a slight difference in favor of girls. Girls develop mentally earlier than boys and reach their mental maturity slightly sooner.

3. Glands of Internal Secretion. In recent years, studies in the field of endocrinology have shown the importance of the role played by certain of the glands of internal secretion in the physical and mental development of the child. These glands affect the development in both the prenatal and postnatal stages of growth. A few of those that are definitely known to influence growth will be used as illustrations.

Calcium is produced by the parathyroid glands, located in the throat, near the thyroids. Deficiency of these glands results in defective bone growth and hyperexcitability of the muscles. Iodine, produced by the thyroid glands, located in the throat also, is essential to physical and mental growth. Deficiency of thyroid activity, during the growth years, stunts the physical and mental development of the child, producing the "cretin," or deformed idiot. Mongolism, a type of mental deficiency characterized by facial features like the Mongols or Tartars, especially the sloping eyes, is believed by some endocrinologists to be due to a pituitary deficiency.

A too active thymus gland (located in the chest), or a too active pineal gland (located at the base of the brain), will retard normal development and keep the child physically and mentally childish too long. Deficiency in the activity of the sex glands delays the onset of puberty, while hyperactivity brings about a precocious sexual development. Extreme cases of gonad hyperactivity are known as *puberty praecox*, or early sexual maturity, in which the child may be sexually mature even between the third and fourth years. And it is important to note that Gesell (1928) found that this produced a "dislocating effect" on the total growth complex: there was no markedly accelerated general mental development but, rather, irregularities in mental abilities.

4. Nutrition. At every age, but especially in the early years of life, feeding is of great importance to the normal development of the child. It is not only the amount of food eaten that is important; the vitamin content is as important, if not more so, than the quantity. Defective teeth, rickets, skin diseases, and innumerable other disturbances can be traced directly to incorrect diet during babyhood and early childhood. The larger stature of the children of today, as well as that of children of the higher economic classes, is due in part to improved feeding in the early years of life.

5. Fresh Air and Sunlight. The size, general health condition, and maturing age of the child are influenced by the amount of fresh air and sunlight the child gets, especially during the early years of life. This is very evident when comparisons are made between children from good and poor environments. Whether they affect the mental development as well as the physical is yet debatable.

6. Injuries and Diseases. Any injury to the child, such as head injuries, toxic poisons from diseases and drugs, bacterial poisons from diseased tonsils, adenoids, or typhoid fever, will retard to a certain extent the child's development. Except when these conditions are very pronounced, the effect is limited almost exclusively to the physical development.

7. Race. Racial differences in development show that children of the Mediterranean races develop physically sooner than do the children of the countries of northern Europe. Likewise, children of the Negro and Indian races are slower in their development than are the children of the white and yellow races.

8. Culture. In an attempt to determine what influence culture has on the young child's development, Dennis (1939) studied a group of Hopi Indian babies. He found that, in spite of the differences in their culture and that of typical American babies, the Hopi babies showed the same social and motor responses as did the American babies. Positive social responses were found to appear at the same age in both cultures. Shyness and fear of strangers appeared at the same age levels. Other reactions were likewise found to be entirely comparable.

In a more extensive study of both Hopi and Navaho Indians in the southwestern part of the United States, Dennis (1940) compared the developmental patterns of these babies with those of white Americans. In the first year of life, there is marked difference in treatment of the babies of the two cultures. Binding and cradling the baby, a practice accepted by both Hopis and Navahos, limits the use of the arms and the legs for the major part of the first year of life. When released from the cradle, the Indian baby is held in the arms of an adult or laid on his back on the floor. No attempts are made to establish toilet habits during the first year, and there is a marked lack of avoidance training. Sitting, creeping, and walking were found to follow in the usual sequence, in spite of the restrictions placed on the Indian babies. Reaching for objects and handling them occurred at approximately the same ages among the babies of the two cultures.

When comparisons were made with the material reported in 40 biographies of white babies (Dennis and Dennis, 1937), it was found that every response of the white babies was observed among the Indians and that no response was observed among the Indians that was not commonly noted among the white babies. Dennis concluded his study with the statement that

> present evidence shows clearly that the general picture of infancy in the two cultures is the same in spite of the diversity of the customs surrounding child care. . . . This corroborates the view that the characteristics of infancy are universal and that culture overlays or modifies a more basic substratum of behavior.

9. Position in the Family. The position of the child within the family may influence his development more through environmental than through native factors. The second, third, or fourth child within a family generally develops more quickly than the first-born, not because of any pronounced intellectual difference but because of the fact that the younger children learn from imitating their older brothers and sisters. On the other hand, the youngest child of the family, especially if distinctly younger than the other children, is apt to be slower in his development because he is "babied" and given little incentive to develop his latent abilities. It has been claimed that the only child of a family, as a rule, develops more quickly along mental lines than children from larger families but is somewhat slower in motor development. In such cases, the mental acceleration of development would seem to be due to the child's constant contact with adults, which stimulates mental development, while the retardation would be caused by lack of motivation which results from having too much done for him.

(10) Hereditary factor
(11) Environmental factor

DEVELOPMENTAL PERIODS

Scientific studies of children have shown that at different ages certain general forms of development are taking place which distinguish that age from the ones which precede and follow it. As the child emerges from one developmental period to another, there is a gradual shift in emphasis on the dominant form of development taking place at that time. While there is no clear-cut dividing line between the different periods, nevertheless, it is possible, on the basis of evidence derived from the study of large groups of children, to mark off major developmental ages, each characterized by its own specific form of development, which overshadows in importance the rest of the development occurring at that age.

The five major developmental periods, with their characteristic forms of development, approximate ages, and names commonly applied to them, are as follows:

1. Prenatal Period. This period extends from conception, when the female ovum is fertilized by the male spermatozoon, to the time of birth, roughly 9 calendar months or 280 days. While the prenatal period is a short one, it is, nevertheless, one of extremely rapid development. Developing from an organism microscopically small to an individual weighing 6 to 8 pounds and measuring approximately 20 inches in length is without question rapid growth. The primary development taking place at this time is physiological and consists of the growth of all the bodily structures.

2. Infancy. Beginning with birth and extending to the age of ten to fourteen days is infancy, the period of the *neonate* or the *newborn*. This

is a plateau or resting stage in human development. It is at this time that adjustment to a totally new environment, outside of the mother's body, must be made, and thus the infant learns to be self-dependent. During this time growth, for the most part, comes to a standstill temporarily and is not resumed until the infant has learned to cope successfully with his environment.

3. Babyhood. The third developmental age in the child's life is babyhood, a period extending from the age of two weeks to approximately two years. This is the age of helplessness because of the baby's necessity for depending on others for his every need. Gradually the baby becomes more independent through learning to control his muscles so that he can feed himself, walk, dress himself, talk, and play. Accompanying this self-reliance is an attitude of independence, which is apt to make the child resent being "babied."

4. Childhood. Strictly speaking, the childhood years include the years from age two to puberty, though the entire period of immaturity, from birth to maturity, is often called *childhood*. Development at this age is characterized first by growth of control over the environment. The child who, as a baby, learned to control his body, now seeks to gain control over his environment so that he can make himself a part of it. When he is not able to do this, he relies upon the use of speech to gain the information he seeks. As a result, he is often a "living question-mark." In addition to this, the child learns to make social adjustments at this age. From approximately the sixth year, socialization is of paramount importance. The name "gang age" is sometimes given to this period because group activities of all sorts play so important a role in the child's life.

5. Adolescence. The adolescent years extend from the onset of puberty, between the ages of eleven and thirteen years in the average child, to the age of maturity, twenty-one years. Because this is such a long developmental age and because different forms of development occur at different times within this age, it may be subdivided into three shorter periods, (*a*) preadolescence, (*b*) early adolescence, and (*c*) late adolescence.

a. Preadolescence. This is a short period, approximately a year long, immediately preceding adolescence proper. In girls it generally occurs between the eleventh and thirteenth years, while in boys it comes approximately a year later. Charlotte Bühler of Vienna has called this the "negative phase," because there is normally a negative attitude or an "about-face" in behavior at this time. Rapid physiological development of the sex life of the child seems to upset, temporarily, the emotional and social control developed in earlier ages.

b. Early Adolescence. This period follows preadolescence and extends

to the age of sixteen to seventeen years, thus coinciding with the high-school age. Very often it is called the "awkward age," because of the awkwardness, clumsiness, and accompanying self-consciousness which so frequently occur. During this time, physical and mental growth are completed.

c. Late Adolescence. This last developmental age, coinciding roughly with the college age, is often referred to as the "smart" or "show-off" age because of the keen delight which the normal boy or girl in this phase of development shows in being the center of attention. The most important forms of development which occur are adjustment to a mature form of life, in which the child learns to be independent of adults and plan his life according to his own wishes. In addition to this, there is adjustment to members of the opposite sex, in which the adolescent gradually learns to get along with members of the opposite sex in work and social activities.

In general, late adolescence may be looked upon as the last step in the long period of development which begins at the time of conception. By the end of late adolescence, development has reached a point where the individual is legally and socially regarded as mature, and thus capable of living an independent life, free from supervision and guidance.

TEXT-FILM

The following McGraw-Hill Text-Film is recommended for use with Chapter II. *Principles of Development*, (16mm sd MP (motion picture) 1½ reels). This film outlines the fundamentals of growth and change from early infancy and brings out the following principles: Development follows a pattern that is continuous, orderly, progressive, and predictable. In this process there is considerable correlation between types of development; *e.g.*, physical growth affects motor development. Often one type waits on the other—if the baby concentrates on walking, he may learn no new words for some months. Development goes from general to specific responses—the baby likes people in general before he prefers his mother. Most children follow the same pattern, and each pattern has its own characteristic traits. All development is caused by maturation and learning; the interrelation of these two is the key to *all* child training. After defining the principles of development, the film considers the variables which make each child different; intelligence, sex, glandular activity, race, nutrition, health, position in the family, incentive, love, and understanding.

Silent follow-up filmstrip, based on material contained in the motion picture, offers opportunity for review, testing, and further discussion.

CHAPTER III

PRENATAL DEVELOPMENT

Life does not begin at birth, as many believe, but at the time of conception, approximately nine months before birth. Growth during the prenatal period is very rapid, resulting in the development of an organism capable of a large number of complex activities in the short span of nine months. Birth is therefore merely an interruption in the normal development of the individual, caused by a change in environments from that of the mother's body to that of the world outside the mother's body.

METHODS OF STUDYING PRENATAL DEVELOPMENT

Speculation about the origin of life occurred in ancient times among primitive peoples, and among civilized peoples. Because primitive peoples did not associate intercourse between the sexes with the birth of the child, many theories of a mystical sort grew up to explain birth. Greek philosophers, on the other hand, recognized the fact that sexual relationship always precedes the birth of a baby and, with this knowledge in mind, evolved a theory which maintained that the woman was the receptive soil in which the seed from the male was planted. This theory held that the role of the mother was to supply nourishment for the developing baby, and the source of this nourishment was believed to be the menstrual blood which ceased flowing during the period preceding the child's birth. Never, in ancient times, was there any recognition of the fact that the mother produces a seed, which, when united with the male seed, gives rise to a new individual.

Later Theories. It was not until the seventeenth century that the woman's contribution to the fertilization of the male seed was recognized. During that era, de Graaf, a Dutch physician, suggested that the woman supplied an egg. A few years later, a Dutch spectaclemaker, van Leeuwenhoek, reported that "little animals," or what are now known as *sperm cells*, were found in the male semen, and these, he contended, were the male contribution to the new human being. During the nineteenth century scientists recognized that the union of the egg and the male cell was essential to the creation of a new organism. Since this discovery, a lively interest in embryology has arisen, with the result that our knowledge of prenatal development is not only more extensive but also more accurate with each succeeding decade.

Studies of the Embryo. Study of the development taking place before birth is extremely difficult and, in some cases, almost impossible in human subjects. Our knowledge of the growth occurring at this time is of necessity limited by the difficulties involved in the study itself. Information about development during the first two months of life comes from studies of animals or from human embryos operatively removed from the mother's body.

Studies of the Fetus. Information about the living fetus comes from three sources: (1) the mother's report of fetal movements; (2) sounds of fetal heartbeats and movements detected by instruments used on the mother's abdominal wall; and (3) direct observations of fetuses operatively removed because a diseased condition of the mother necessitated the artificial termination of pregnancy.

Reports given by mothers in regard to fetal movements are, like all introspective reports, subject to error. How accurately the mother will be able to report will depend, in large measure, on her interest in the subject and on her training in scientific techniques. For the most part, the only information of importance to be derived from this technique is the fact that the prenatal activity is pronounced enough for the mother to be able to feel it and localize it. Furthermore, mothers may vary in their uterine sensitivity, owing to such physical factors as their size, the position of the fetus in the uterus, and muscular tension. These individual differences in the threshold of sensitivity are bound to have a profound influence on the mother's introspective report.

Technical aids and special apparatus, such as the stethoscope, cardiograph, string galvanometer, and X ray have been used to study fetal heartbeat, fetal activity, position of the fetus, and whether or not there will be twins. Ray (1932) measured fetal movements by placing a 2-inch tambour, diaphragm side down, on the mother's abdomen and fastening it there with adhesive tape. This was connected with a recording tambour. Movements of the fetus could thus be recorded. The mother was given a key to press when she felt a fetal kick.

Sontag and Wallace (1933, 1934, 1935*a*) used a similar method. Sounds were produced directly over the fetus's head by a doorbell, a buzzer, and a wooden knocker vibrated against a disk. The sounds caused movements of the fetus. The movements became more marked as time progressed and as the fetus reached full term.

More recently, Kellogg (1941) has used a recording technique which is simpler than the previously used methods because it is mechanical rather than electrical or pneumatic. It consists of two light metal plates, which are fitted over the maternal abdomen in such a way that they tilt whenever the contour of the abdomen is changed by pressure from within.

Recording devices then transmit these tilts to a kymograph. The tracings of the fetal reactions are not complicated in any way by maternal respiration, and separate recordings of the caudal and rostral ends of the fetus are possible.

Direct observations of a human fetus are impossible except in the case of fetuses from miscarriages, abortions, and premature births. These fetuses are rarely "normal" but are defective in one aspect or another, which has led to the early termination of pregnancy. The procedure used by Minkowski (1921–1928*a*) illustrates the third method of studying the fetus. It consisted of taking the fetus alive from the mother's body by Caesarean section under a local anesthetic. The fetus was then placed in a bath of physiological salt solution at normal blood temperature to prolong its life and make experimental study possible. This technique involves cutting off the fetus from normal oxygen supply, and the movements observed are thus the movements of an increasingly asphyxiated organism with increasing metabolites in the blood, which results first in hyperactivity and then hypoactivity.

Studies of Prematurely Born Infants. It is obviously not justifiable to take evidence uncritically from prematurely born infants to interpret fetal behavior, because a change in the environment produces different reactions in the infant as compared with the fetus. For example, changes from placental to pulmonary respiration, from amniotic fluid to life in the air, or from a relatively constant external stimulation of the intra-uterine environment to the varied and changing one outside of the uterus make comparisons difficult. For that reason, data concerning prenatal development must come from the three sources listed above.

THE MECHANISMS OF INTRA-UTERINE DEVELOPMENT

What the individual is, and what physical and mental traits he possesses, are determined by the type of parents, grandparents, and other ancestors he had. What is transmitted from parent to offspring is not the trait itself but something which will determine the form the trait will take in the offspring. This is the "gene," the true carrier of heredity.

Carriers of Heredity. In bisexual reproduction, characteristic of many species, including man, the individual begins his existence as a single cell, the fertilized germ cell or *zygote*. This cell is formed by the union of two germ cells, one from the male and the other from the female parent. The outer ring of the cell is the *cytoplasm*, which consists of a mass of relatively undifferentiated protoplasmic material. The function of the cytoplasm is still unknown. Within the cytoplasm is the *nucleus*, the "life-giving" part of the cell. This contains the *chromo-*

3. While normally only one ovum is produced in each menstrual cycle, approximately 28 days, the spermatozoa are very numerous, with as many as 200,000,000 found in 3 cubic centimeters of seminal fluid in one ejection.

4. The ovum carries a large bulk of cytoplasm, containing the nucleus, which is made up almost entirely of bundles of genes, and some yolk which assists in nourishing the embryo. The spermatozoon, on the other hand, has a minimum of cytoplasm.

5. The ovum contains 24 matched chromosomes while half of the spermatozoa contain 23 matched and 1 unmatched, and half, 24 matched chromosomes. The significance of this difference in number of chromosomes in the spermatozoa will be discussed in the section Determination of Sex.

Beginnings of Life. How life begins, and the sources from which the new organism develops, must be clearly understood if the picture of human growth is to be complete. The early stages of growth and the approximate times at which they occur are as follows:

1. *Ovulation* is the process of maturing and escape from an ovary of one ovum during each menstrual period. The female ovary is made up of a mass of follicles containing ova which, if and when they develop, will be capable of being fertilized by male germ cells. It has been estimated that at birth there are approximately 200,000 ova, many of which will atrophy during childhood, leaving only about 30,000 when the girl reaches puberty. Of these, approximately 400 mature between the onset of puberty, between thirteen and fifteen years of age, and the onset of the menopause in the middle forties.

During every menstrual cycle of about 28 days each, one of the follicles swells, is pushed to the surface of the ovary, ruptures, and expels a tiny ripe ovum. Though not definitely proved to be true, it is generally believed that the two ovaries alternate in this function with one ovary producing an ovum one month and the other, the next month.

After being released from the ovary, the ovum enters the open end of the nearest Fallopian tube and is propelled along the tube by means of cilia which line the tube. Ovulation generally occurs between the fourteenth and seventeenth day following the onset of menstruation. The ovum remains in the Fallopian tube for a period of time, ranging in length from 3 to 7 days, before it reaches the uterus.

2. *Fertilization*, or conception, consists of the formation of a fertilized egg, or *zygote*. Before the sperm cell reaches the ovum, it has to travel a long and hazardous path from the male sex glands, the *testes*, to the female ovary. In normal fertilization, the ovum is in the Fallopian tube on its way from the ovary to the uterus. Fertilization is believed to take place

shortly after the ovum enters the tube. As a result of coitus, spermatozoa are deposited at the mouth of the uterus and make their way toward the tubes. They are attracted to the ovum by a strong hormone attraction, which draws them into the tubes, and are aided by the force of the rhythmic muscular contractions of the walls of the tubes.

The sperm must reach the ovum before it loses its energy. It is believed that a healthy sperm cell can wait in the female sex organs before losing too much of its energy to be able to penetrate the ovum. If the ovum is not fertilized while it is in the Fallopian tube, it will die in the uterus and be expelled with the menstrual flow. This means that fertilization can occur only during a few days in approximately the middle of the menstrual cycle.

Occasionally the fertilized ovum does not move down through the Fallopian tube in which fertilization took place but remains in the tube. This is known as a *tubal pregnancy*. Because complete fetal development is impossible in the tube, it is then necessary to remove the fertilized ovum surgically. Occasionally, fertilization occurs in the abdominal cavity, which likewise necessitates surgical removal.

After one sperm enters the ovum, the surface of the ovum is so changed that no other sperm cells can penetrate it. Thus, the fertilized ovum is completed when contact with one sperm has occurred. When the sperm cell penetrates the wall of the ovum, the nuclei from the two cells approach each other. In time, there is a breakdown in the membrane surrounding each, and this allows the two nuclei to merge. The new cell, thus formed, has the original number of chromosomes, 24 pairs, one-half of which came from the male and one-half from the female cell. At the time of fertilization, not only is a new individual created, but the hereditary traits as well as the sex are determined. The maternal and paternal chromosomes join to form the paired arrangement referred to above. The importance of this lies in the fact that each offspring receives from his parents determiners of traits which they received from their parents, grandparents, and other ancestors. Some of the traits that the parents received cannot be passed down to their offspring because they are lost when the cell divides.

Because each human being, whether male or female, produces many more germ cells than will ever be used, and because in each of these cells are genes from both parents in varying numbers, two important points must be remembered: (1) it is impossible to predict with any degree of certainty what the offspring will be like, since the genes are assorted by chance; and (2) the genes carry the traits of the ancestors of the individual and may produce in the offspring traits that are traceable to one or more of the ancestors, even though they may not be found in either parent.

THE DETERMINATION OF SEX

For centuries, two outstanding problems have existed in relation to the determination of sex: the first consists of an attempt to *predict*, early in pregnancy, the sex of the unborn child; and the second, to *control* the sex desired. Because so many superstitious beliefs and practices have grown up as a result of the desire to meet these problems, a brief survey of the most common superstitions will serve to show how important a role they have played in the past.

Predicting Sex. Attempts to predict the sex of the developing fetus have been numerous and, for the most part, ludicrous. A coin tossed over the shoulder of a pregnant woman would, if it came up "heads," foretell the arrival of a boy baby while "tails" meant a girl. In German folklore there is the superstition that if barley and wheat are soaked in the urine of a pregnant woman and then planted in the ground, the sex of the fetus can be detected by the one that grows first. Should it be barley, the offspring would be a girl, while wheat would forecast the arrival of a boy.

Recently, more scientific techniques have been used to predict sex. The *heartbeat test* maintains that if the fetal heartbeat is 125 or less per minute, the fetus is a boy; 144 or more heartbeats per second means that the fetus is a girl. Unfortunately this test is not accurate because of the individual differences that occur in the rate of the heartbeat. More recently an attempt has been made to use X ray in the *ossification-of-bones test.* This is based on the knowledge that comparable bones ossify earlier in girls than in boys. But, once again, individual variations from one fetus to another make this test far from accurate. At the present time, any attempt to predict sex is no more accurate than guessing.

Controlling Sex. For centuries, there have been countless theories about how sex can be controlled in the human offspring. An early superstition was that if a man went to bed on his wedding night wearing his boots, a boy would be conceived. Some theories stress that fertilization just after menstruation is supposed to result in the female offspring. Others claimed that the food eaten by the mother during pregnancy would determine the sex of the child. A girl child, it was believed, could be produced if the mother ate large amounts of sugar. The month of the year when conception occurred was likewise supposed to determine sex. Recent experimental investigations have disproved all the old theories and have, at last, given accurate scientific data regarding a problem that man has striven for years to solve.

X and Y Chromosomes. Discovery of sex chromosomes has shown that the factors that actually determine sex are internal, and that the sex

of the fertilized ovum is fixed at the time of fertilization. In every species in which sexual reproduction occurs, one of the sexes has a pair of chromosomes represented by a single member like the other chromosomes and one that is different. In the human being, the unmatched chromosomes

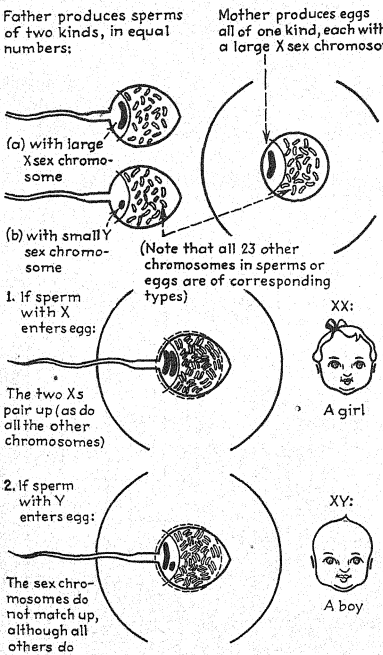


FIG. 10. How sex is determined. (*From A. Scheinfeld, Men and women. Harcourt, Brace, 1943. Used by permission.*)

appear in the male, while in the female all pairs are matched. Sex is determined by the presence or absence of a pair of unmatched chromosomes, the X and Y chromosomes, in the matured spermatozoon. This is illustrated in Fig. 10, which shows how male and female chromosomes combine to determine the sex of the new offspring.

When the sperm cell divides during the maturation process, half the spermatozoa thus formed contain an X, or matched, chromosome and half an unmatched, or Y, chromosome, the latter differing somewhat in size and shape from the matched chromosomes. There are thus, at the time of maturation of the spermatozoon, 23 pairs of matched chromosomes and an extra pair made up of one X and one Y chromosome. When division occurs, there are, as a result, two kinds of spermatozoa, one with 23 matched, or X, chromosomes and one unmatched, or Y, chromosome. The second type contains 24 matched, or X, chromosomes. These two kinds of sperm cells occur in equal numbers. In the case of the female ova, on the other hand, all have an equal number of matched chromosomes.

When the ovum is fertilized by the spermatozoon with the Y chromosome, a male offspring results; when fertilized by a spermatozoon with all X chromosomes, on the other hand, the result will be a female offspring. Whether the ovum will combine with a spermatozoon with a matched or an unmatched chromosome, no one can tell ahead of time, and no one can influence the combination in any way. After fertilization has occurred, nothing can be done to change the sex of the fertilized cell. Determination of sex is therefore obviously a matter of chance. It is not something that can be controlled or influenced by human endeavor.

Statistics show that there is an excess of male births in the ratio of 105 to 100, or, that there are 105 boys born to every 100 girls. This excess of boys is seen also in abortions and premature births. The chances of being a boy are thus 5 per cent greater than those of being a girl. What is responsible for the larger percentage of boys than girls is still unknown. It has been explained in many ways, the most credible explanation being based on the belief that because the 23 X and 1 Y chromosome spermatozoon (the one that produces a male offspring) is slightly lighter and hence swifter in movement than the 24 X chromosome spermatozoon (the type that produces female offspring), it is likely to reach the ovum sooner. As a result, the chances of producing a male offspring are slightly greater than the chances of producing a female one.

MULTIPLE BIRTHS

Multiple births, or the birth of two or more offspring within a few days of one another, are the result of an asymmetrical cell division or of several simultaneous fertilizations. When the fertilized ovum divides, early in the prenatal period, cells may split away from each other, and each group thus formed grows independently of the others. In the case of the Dionne quintuplets, for example, there was evidence to show that six embryos started an independent development as a result of cell division

in the fertilized ovum. One of these aborted, while five reached maturity.

The larger the number of offspring born at the same time, the rarer is the occurrence. In the table given below are the estimated relative frequencies of the different types of multiple births. These figures conform to Hellin's Law. According to this law, you can estimate mathematically the approximate numbers of different multiple births by following this formula: If the frequency of twins is represented by P, the frequency of triplets will be approximately P^2, of quadruplets, approximately P^3, of quintuplets, approximately P^4, and of sextuplets, approximately P^5.

TABLE III. ESTIMATED RELATIVE FREQUENCIES OF MULTIPLE BIRTHS

Twins	once in every 85 births
Triplets	once in every 7,225 births
Quadruplets	once in every 614,125 births
Quintuplets	once in every 52,200,625 births
Sextuplets	once in every 4,437,053,125 births

Twins. It was formerly believed that all twins (two individuals born at the same time) were of the same type. Recent scientific studies have revealed that there are two distinctly different types of twins. The first type, the *identical*, or uniovular, twins, come from a single ovum fertilized by a single sperm; the second type, the *nonidentical*, biovular, or fraternal twins, are the product of two ova fertilized simultaneously. Nonidentical twins occur more frequently than identical twins, though there are no statistics available to show exactly what the difference in frequency is. It is estimated that approximately one-fourth of all twins are of the identical egg type. Figure 11 illustrates the two types of twins.

Identical Twins. When one ovum is fertilized by one spermatozoon, it occasionally happens that at the time of the first division of the cell, when the ovum divides to form two, these new cells separate instead of remaining together. Why this division takes place, no one knows. The result is that each part develops into a complete individual. Twins formed thus are called "identical" because they have exactly the same assortment of genes. For that reason, they resemble one another very closely in all their hereditary traits. They have the closest degree of kinship possible for two distinctly separated individuals. They are always of the same sex; they have one placenta and are enclosed in one chorion coat.

Nonidentical Twins. In the human female, only one ovum normally matures at a time and thus only one child develops. Occasionally, two or more ova may develop simultaneously and be fertilized at the same time. The individuals who develop from these two ova are known as *fraternal*, *biovular*, or *nonidentical* twins. The name "nonidentical"

suggests lack of similarity in the physical and mental make-up of the twins. The explanation of this fact is that, when the chromosomes of the two ova divide, the grouping is not likely to be the same for both. One ovum may receive a preponderance of chromosomes from the maternal grandfather and the other, from the maternal grandmother. In addition to that, both ova are fertilized by individual spermatozoa, each with its own assortment of chromosomes. The offspring, as a result, are certain to be unlike in many traits, as is true of ordinary brothers and sisters.

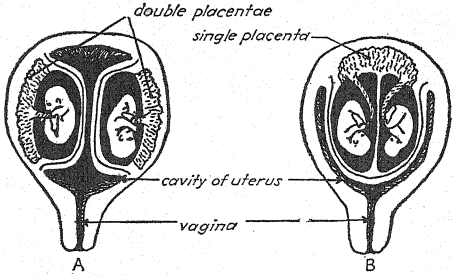


FIG. 11. Two possible relations of twins within the uterus. *A*, False, or fraternal, twins, with separate placentae and occupying separate walls of the uterus. *B*, True, or identical, twins, having one placenta in common, and embedded in one place in the uterine wall. (*After Corning, from M. S. Gilbert, Biography of the unborn. Williams & Wilkins,* 1939. *Used by permission.*)

Nonidentical twins may be of the same or of opposite sexes. During the prenatal period, two distinct placentas are formed, and each ovum thus has its own prenatal environment. Nonidentical twins are not really twins, but rather are simultaneous pregnancies.

Abilities of Twins. Many studies have been made in recent years to determine the physical and mental similarities of twins. These, for the most part, agree that identical twins show marked similarities even when reared apart. Wingfield and Sandiford (1928) gave intelligence tests to 102 pairs of twins and reported that there is no significant difference in the amount of resemblance in mental traits between younger and older twins, and that twins are no more alike in traits upon which the school has concentrated its attention than in general intelligence. Twins as a group, they reported, are very slightly below (2 to 3 per cent) the average of the population in general intelligence, but they show the same degree of variability as unselected children.

A comprehensive study by Newman, Freeman, and Holzinger (1937)

revealed that, in most of the traits measured, identical twins are much more alike than are fraternal twins. This is true of physical measurements, intelligence, and educational achievement. Personality traits are the only ones in which identical twins are not much more alike than are fraternal twins. In identical twins reared apart, Newman *et al.* found significant differences in weight, intelligence, and school achievement.

The social competence of identical twins, as measured by the Doll Social Maturity Scale, revealed, according to Troup and Lester (1942), a more marked relationship than was found in intelligence. The correlation for social quotients for the twins was .94 ± .021 and for intelligence, .77 ± .072. There was no evidence of sex differences in the average social competency as measured by S.Q.s in the twins studied.

Triplets. Scientific studies of triplets are few in number. Of those that have been made, most are based on one or two sets of triplets. Sanders (1932) reported the I.Q. ratings for two sets of Dutch triplets. Set 1 had an I.Q. range from 90 to 95, which he classified as "dull"; set 2, a range from 80 to 88, which he rated as "stupid." In Lund's (1933) study of one set of triplet girls, the Stanford-Binet I.Q.s were from 104 to 109, and the Kuhlman-Binet I.Q.s were 109 to 116. These are the highest I.Q. scores reported to date.

The most comprehensive study of triplets up to the present is reported by Howard (1934). Howard studied 69 triplets, ranging in age from two to fifteen years. The average triplet was found to be retarded behind the average single-born child in developmental traits and in anthropometric measurements during early childhood. There was, however, a tendency for the older triplets to approach the level of single-born persons of their age more nearly than did the preschool triplets.

In a study of the same triplets, using psychological tests, Howard (1946) measured the intelligence of preschool triplets with the Minnesota Preschool Test, Form A, and of the school-age group with the Kuhlman-Binet Test. The mean I.Q. score for the preschool group was 87.80 and of the school-age group, 92.85. The school-age triplets were thus found to be slightly superior to the preschool group.

Emotional and personality development were studied by observations, "personal data" questionnaires, and tests. The masculinity and femininity of the triplets was studied by a modified form of the Lehman and Witty Play Quiz, the masculinity-femininity scoring of the Good-enough Drawing Test, and the Stanford Masculine-Feminine Attitude-Interest Test. The tests indicated that the triplets behaved socially and temperamentally like single-born children of the same age and had interests and attitudes normal for their sex.

In a comparison of the developmental histories of 229 sets of triplets,

29 of which were subjected to detailed examinations and comparisons made with twins and singletons, Howard (1947) noted a developmental lag in the triplets. In Table IV is given a comparison of triplets and singletons in a number of developmental traits. The comparison is made with the ages reported for singletons by different authors.

TABLE IV. COMPARISON OF TRIPLETS AND SINGLETONS IN DEVELOPMENTAL TRAITS

Developmental traits	Author	Median age, months	
		Singletons' standing	Triplets' standing
Length of time nursed partly....	White House Conference	6.6	7.6
Age of sitting alone.....	Bühler	8.0	
	Shirley	7.7	8.0
Age of standing alone.....	Shirley	15.5	12.3
Age of walking alone.....	Mead	13.5	
	Smith	13.5	
	Shirley	15.0	16.0
Age of erupting first tooth.....	Abt	6–8 (av.)	9.52
Age of saying first word.....	Mead	15.7	
	Shirley	15.0	16.0

Source: HOWARD, R. W. The developmental history of a group of triplets. *J. genet. Psychol.*, 1947, **70**, abbreviated from p. 198. Used by permission.

The data presented in this table show triplets to be slightly below the norms for single children in most traits. Comparison with norms given by Day (1932, 1932*a*) for 80 pairs of preschool twins with the data for the triplets was summarized by Howard as presented in Table V.

TABLE V. COMPARISON OF TWIN AND TRIPLET DEVELOPMENT

Trait	Twin (Day)	Triplet
Birth weight.....	5.72 pounds	5.70 pounds
Mean age of talking.....	17.0 months	13.45 months
Mean age of walking.....	14.90 months	16.29 months
Mean age of erupting first tooth.....	8.1 months	9.07 months

Source: HOWARD, R. W. The developmental history of a group of triplets. *J. genet. Psychol.*, 1947, **70**, 198. Used by permission.

As may be seen, the twins are superior to the triplets in age of walking and of erupting the first tooth. There is very little difference between the birth weights of the twins and triplets studied in these two reports.

Howard noted that in physical, as well as in intellectual, development, the triplet group she examined was slower than singletons in the tempo

of development. The older triplets, however, more nearly approached the norms for mental and language development than did the younger. This, Howard explained, suggests that the developmental lag may affect only the early development.

Quintuplets. Numerous reports of the famous Dionne quintuplets have appeared from time to time since their birth. One of the most authoritative of these is that of Blatz (1938). According to Blatz, the quintuplets did not begin to walk until they were about fifteen months old. They used gesture language, as is true of twins, and did not catch up to single children until about the fifth year. At the age of three years, they had a vocabulary of 110 words, which is retarded for that age. Intelligence tests were given only until the quintuplets were about 3½ years old. These tests showed them to be backward as compared with norms for single children.

PERIODS IN PRENATAL DEVELOPMENT

The prenatal period, which extends over 9 calendar months, or 10 lunar months, is approximately 280 days long. This period may be divided roughly into three subdivisions: (1) *the period of the ovum,* which extends from the moment of fertilization to the end of the second week; (2) *the period of the embryo,* which extends from the end of the second week to the end of the second month; and (3) *the period of the fetus,* which extends from the end of the second month to birth. Each one of these periods is characterized by development peculiar to it. In making a survey of the prenatal development of the human infant, this subdivision into three periods will be followed.

At no time during the prenatal period is the developing organism just a miniature adult in proportions, as may be seen in the accompanying diagram (Fig. 12).

The proportions of the entire body, as well as the different bodily structures themselves, are different. Likewise, the behavior of the individual before birth differs from that of the full-term infant after birth.

THE PERIOD OF THE OVUM

This period extends from the moment of fertilization to the end of the second week. During this time, the individual retains an egglike organization. Its size remains practically unchanged because it receives little or no external nourishment. Marked changes, however, occur in the internal structure of the *zygote,* or fertilized egg. The single cell divides and subdivides many times until a globular cluster of many cells is formed. A small cavity forms within the mass of cells, thus resulting

in an outer and separated inner cluster of cells. The outer layer develops later into accessory tissues that protect and nourish the embryo. Part of the inner cluster of cells develops into the embryo.

This cell division takes place as the fertilized ovum is carried down the Fallopian tube to the uterus. By the time it reaches the uterus, it is about the size of a pinhead, though its size varies according to how long

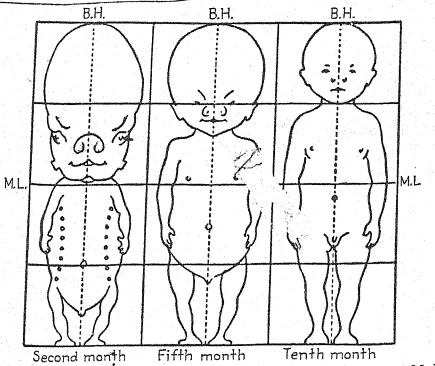


FIG. 12. Body proportions during the prenatal period. B. H., body height; M. L., midline. (*From C. Murchison, A handbook of child psychology, 2d ed. rev. Clark University Press*, 1933. *Used by permission.*)

it has been in the tube after being fertilized. During the first week of this period, the fertilized ovum is unattached and free-moving.

After fertilization has occurred, the lining of the uterus changes in structure to be ready to receive the fertilized ovum. When the ovum reaches the uterus, it quickly implants itself in the uterus wall and sinks from sight. At the spot where it comes to rest, the placenta develops. This is the temporary organ from which the umbilical cord extends to the ovum. Through it, nourishment passes from the mother's blood stream and waste products are eliminated. The ovum, thus implanted, becomes a parasite, receiving its nourishment from the mother. *Implantation* occurs about 10 days after fertilization.

THE PERIOD OF THE EMBRYO

The period of the embryo extends from the second week to the end of the second month. It is a time of rapid change. By the end of this period, the embryo represents a miniature individual in his development.

From then on, the major changes that take place consist of changes in actual or relative size in the parts of the body already established, rather than the appearance of new features.

After implantation, the cell mass which started to develop immediately after fertilization differentiates into three layers, the *germ layers*, from which all parts of the body develop. These layers grow unequally, with folding in and out of the portions of the layers, and thus give rise to the different body structures. The outer layer, the *ectoderm*, produces the epidermis of the skin, hair, nails, parts of the teeth, skin glands, sensory cells, and the entire nervous system. The middle layer, the *mesoderm*, gives rise to the dermis, or inner skin layer, the muscles, circulatory and excretory organs. From the innermost layer, the *endoderm*, come the lining of the entire digestive tract, the Eustachian tubes, trachea, bronchia, lungs, liver, pancreas, salivary glands, thyroid glands, and thymus.

The *placenta*, a sac made up of four membranes which develop around the embryo shortly after implantation, serves to protect the delicate tissues of the embryo. After the baby has been born, the placenta is discarded as *afterbirth*, because its usefulness has ended. Where the ovum attaches itself to the uterus, the *umbilical cord* develops. In time, this cord may become 10 to 20 inches long and the thickness of a man's finger. It contains three blood vessels: a vein, which carries blood passively back to the fetus, and two arteries, which carry impure blood from the fetus to the placenta. There is no nerve connection between the mother and the fetus, nor is there a direct union of maternal and fetal blood vessels.

End of Second Lunar Month. By the end of the second lunar month, the embryo is approximately 1¼ to 2 inches long and weighs about 2 grams, or ⅔ ounce. This is an increase of about 2,000,000 per cent since fertilization occurred. Its form is so well developed that it is distinctly human and would not be mistaken for an animal. The head development is the most pronounced of the entire body. The *eyes* are now in front of the face, with *eyelids* in the form of folds of skin above the eyes. The *ears* closely resemble those of a human being but are low on the side of the embryo's head. The *mouth* opens, and the *lower jaw* is small so that the embryo is almost chinless. There is a single broad *nose* and a large, bulging *forehead*. The *body proportions* differ from those of the newborn in that the head of the embryo is enormously large while the arms and legs are tiny.

The *trunk* is no longer potbellied, but is elongated and rounded, so that it resembles that of a human. Most of the internal organs are apparent. The *liver*, which is one-tenth of the entire body volume,

crowds the rest of the organs. Bile is secreted from it at this time. The *intestines* are shoved into the umbilical cord, and the *appendix* appears. The *diaphragm* is a sheet of tissue which divides the chest from the abdominal cavity. The *sex organs* are now differentiated in both the internal and external structures, so that it is possible to distinguish the sex of the embryo in a large percentage of cases.

The *arms* have elbows and webbed fingers while the *legs* have knees and webbed toes. The *tail* of the embryo reaches its maximum development at this age and then regresses. Most of the *muscles* of the body are formed and some of them, especially the muscles of the arms and legs, are capable of functioning. No bone is deposited at this time. There is a *cartilage* formation of backbone, ribs, collarbone, arm, and leg bones which have the shape of the bones they represent. Around the middle of each cartilage is a narrow sheet of hard bone which, in succeeding months, spreads nearer to the surface while the cartilage degenerates and disappears.

The *umbilical cord* shows regular spinal twists, owing, it is believed, to the turning of the fetus in the uterus. In operatively removed fetuses, *spontaneous movements* can be observed. These movements are worm-like contractions of the arms, legs, and thorax. They are ideo-muscular in character and not evoked by external stimulation. *Peristaltic movements* may begin as early as the seventh week.

The Period of the Fetus

The period of the fetus extends from the end of the second month to the time of birth, which normally occurs at the end of the tenth lunar month. It is characterized chiefly by the growth and development of the parts of the body established in the second period, the *period of the embryo*, rather than by the appearance of new parts.

At the end of the third lunar month, the fetus measures approximately 3½ inches long and weighs about ¾ ounce. Two months later, it measures approximately 10 inches and weighs about 9 to 10 ounces. By the end of the eighth lunar month, the fetus is from 16 to 18 inches long and weighs from 4 to 5 pounds. At the age of ten lunar months, the end of the prenatal period, the fetus is about 20 inches long and weighs from 7 to 7½ pounds.

From careful measurements of more than 300 fetuses, from the third lunar month to birth, Scammon and Calkins (1929) found that their development follows the law of developmental direction. The *body length* showed a rapid increase in the beginning of the fetal period and a steady decline in growth rate later. The body-length increase was a little over sevenfold between the third month and birth. The *head* is nearly one-

third of the total body length at the third fetal month; one-fourth, at the sixth month; and slightly less than one-fourth, at birth. The *face* becomes relatively a little broader in the fetal period.

The external dimensions of the *trunk* increase between sevenfold and ninefold from the third fetal month to birth. The trunk becomes more slender in relation to body length in the latter part of the fetal period. The girth of the abdomen increases more rapidly than the girth of the thorax (at the level of the nipples). At the third fetal month, the length of the *arms* approximates one-third of the total body length and two-fifths at birth. Between the third fetal month and birth, the length

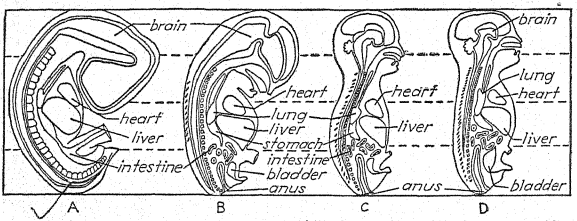


FIG. 13. Diagrams of fetuses of two months (*A*), three months (*B*), five months (*C*), and nine months (*D*), all brought to the same height. The main internal organs are shown in their proper relative size and position. (*Adapted from Broman and Jackson, from M. S. Gilbert, Biography of the unborn. Williams & Wilkins,* 1939. *Used by permission.*)

increases about eightfold; the hand length, eightfold; and the circumference, fifteenfold. Before the third fetal month, the arms are longer than the legs. After that, the reverse is true.

The *internal organs* are not only well developed but they begin, in some instances, to function at the end of the third lunar month. By the end of the fifth lunar month, they assume positions nearly like those of an adult. By the fourteenth or sixteenth week, *fetal heartbeat* can be detected by a stethoscope. Studies of fetal heart rate were made by Sontag and Richards (1938) of 30 fetuses during the last 6 months of pregnancy.

The heart rate showed a tendency to decline as pregnancy progressed. Comparisons with the heart rate of newborn infants showed that that of the newborn is lower than the fetal heart rate and is significantly more variable. Heart rate during periods of fetal activity showed tremendous variations, with an increase of 30 to 40 beats within a minute, then subsiding as quickly.

The *nervous structure* necessary for reflexes, including the peripheral nerves, spinal ganglia, medullary area, anterior and posterior roots, is present but in an embryonic state at the end of the third lunar month.

At this time, the *muscles* are well developed, and spontaneous movements of the arms and legs may be observed. These movements are asymmetric, uncoordinated, and arhythmic. A month later, the muscles are capable of spontaneous movements. They are more rhythmic and coordinated than before.

When the fetus reaches the end of the seventh lunar month, he is at the age of *viability*. He has a chance of living if born at that time, because of greater development of the nervous system than during the previous month. A month later, the *body* is completely formed. In Fig. 13 are diagrams showing the relative development of fetuses of different ages.

PRENATAL NUTRITION

Until the fertilized ovum becomes attached to the wall of the uterus, it is nourished by a small amount of yolk within the ovum itself. This is soon used up, but not before the ovum implants itself in the wall of the uterus. The ovum then absorbs water and some nutritive substances from the wall of the uterus in which it has become embedded.

When the fetal heart begins to beat, the fetus depends entirely upon the mother for nourishment. It is a parasite in that it feeds upon another body without giving anything in return. Food and oxygen pass from the mother's system to that of the fetus, through the pure blood from the placenta that comes through the umbilical vein. The waste products pass from the fetal to the maternal blood through the two umbilical arteries.

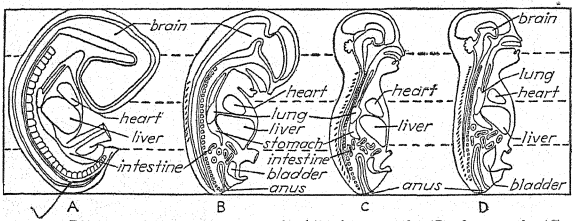
NEURAL DEVELOPMENT

Development of the nervous system proceeds at a rapid rate throughout the entire prenatal period. The beginnings of the nervous structures of the body are apparent as early as the *period of the ovum*, the first two weeks following fertilization. In the beginning of the *period of the embryo*, the period extending from the end of the second week to the end of the second month, the first groove in the ectoderm folds inward to form the neural tube, the lower part of which develops, eventually, into the spinal cord and the upper part into the brain.

Brain. By the fifth week, the principal structures of the brain, the cerebellum, medulla, midbrain, and endbrain, can be distinguished at the top of the neural tube. These higher brain centers do not, however, function effectively until the time of birth. During the second month, neurones appear in the form of neuroblasts, or cells without nervous extensions. By the third month, short, threadlike prolongations appear. Later, they become the axons and dendrites of the neurones. By the fifth prenatal month, it is believed, the complete number of neurones to be

third of the total body length at the third fetal month; one-fourth, at the sixth month; and slightly less than one-fourth, at birth. The *face* becomes relatively a little broader in the fetal period.

The external dimensions of the *trunk* increase between sevenfold and ninefold from the third fetal month to birth. The trunk becomes more slender in relation to body length in the latter part of the fetal period. The girth of the abdomen increases more rapidly than the girth of the thorax (at the level of the nipples). At the third fetal month, the length of the *arms* approximates one-third of the total body length and two-fifths at birth. Between the third fetal month and birth, the length



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possessed by the mature individual is present, though many of them are still in a very immature state of development. How well developed the human brain is at different periods during prenatal development is illustrated in Fig. 14.

From the fifth month to the end of the prenatal period, development of the nervous structures consists of extension of the axons and dendrites, modifications of the synapses, and acquisition of a myelin sheath or cover-

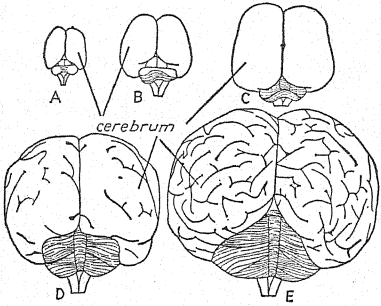

FIG. 14. Development of the human brain. Views of the brains of successively older fetuses, seen from the top and back of the brain. Note the increase in the size of the cerebrum and the formation of complex grooves and ridges on its surface. (*A*) Third month. (*B*) Fourth month. (*C*) Fifth month. (*D*) Seventh month. (*E*) Ninth month. (*After Retzius and Broman, from M. S. Gilbert, Biography of the unborn. Williams & Wilkins*, 1939. *Used by permission.*)

ing. This makes possible the establishment of patterns and systems of organization of the paths, some of which are functionally mature before birth, some at birth, and others not until after birth. The earliest to mature are the ones involved in the fundamental reflexes and vegetative control, as in the case of the heartbeat. The maturing occurs first in the spinal cord, then in the midbrain, and last, in the various regions of the cerebral cortex.

FETAL ACTIVITY

Individual differences in fetal activity have been noted and reported by mothers. Some fetuses are active as much as 75 per cent of the time, others as little as 5 per cent. There are differences in the type of fetal activity, as well as in amounts. Some fetuses constantly turn and squirm, while others keep the same position but kick and thrust with their hands and feet. Some have hiccups almost every day, others not at all.

Samplings of fetal activity made twice daily for 30 minutes prior to rising and after retiring were reported by Harris and Harris (1946). All records were made by the mother, who estimated on a four-point scale her feelings of fatigue or well-being. Observations were made continuously for 129 days, terminating 36 hours before the infant's birth. Fetal movements were found to increase in strength and number most

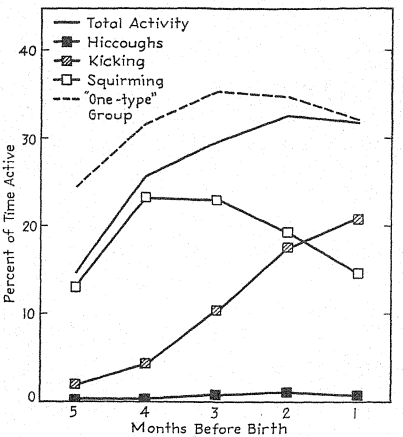

FIG. 15. Developmental trends in three types of fetal activity as shown by group means. (*From H. Newberry, The measurement of three types of fetal activity. J. comp. Psychol.*, 1941, **32**, *pp.* 521–530. *Used by permission.*)

rapidly during the first month of perceived motility. The fetus was more active at the close of the day than in the morning, thus giving no assurance that the mother's fatigue was associated with fetal activity.

Newberry (1941) recorded three types of fetal activity. These were (1) slow squirming, stretching, pushing, and turning movements; (2) quick kicks, jerks, and thrusts of the extremities; and (3) hiccups or rhythmic series of quick convulsive movements. In Fig. 15 are shown the curves for these three types of fetal activity. Kicking activity proved to be the largest component of the total and hiccuping, the smallest.

The amount of activity, it may be seen, increases significantly from

the sixth to the tenth lunar month of pregnancy, increasing most rapidly in the earlier months. There was no tendency to increase after the ninth month, which, Newberry explained, may be due to increased pressure on the fetal head, inhibiting bodily movement, or to crowding of the entire fetal body, thus decreasing the space available for movement.

Some significant facts about fetal activity have been reported by Kellogg (1941), who recorded the activity of one fetus from the 170th to the 256th day of fetal life. These facts are

1. Spontaneous activity showed a regular increase with fetal age, although there was large variability in the amount of recorded movement from day to day.

2. Between the 170th and the 199th day, the rostral (head) end of the fetus was more active than the caudal (leg) in 81.3 per cent of the observation periods. But, between the 220th and the 256th days, the activity of the rostral end exceeded that of the caudal end in only 55.6 per cent of the periods of observation. In the early periods of observation, the fetus was active only about one-fourth as much time as it was inactive. During the period from the 240th to the 249th day, it was active more than twice as much as it was inactive.

3. The introspective report of the mother regarding the extent and duration of fetal movements closely paralled the objective data. These introspective reports revealed that the number of separate periods of fetal activity experienced by the mother decreased with fetal age. Their average length, however, increased from about 4 seconds to about 33 seconds from the 170th to the 256th days.

Richards and Newberry (1938) observed that infants who bad been most active as fetuses showed certain motor performances earlier than most of the other children in the group. The individuals who, as fetuses, had been least active had, in some cases, been slow in acquiring motor skills postnatally. When the 6 months' Gesell Schedule was given to 12 of the infants whose activity in fetal life had been studied, there were found to be consistently positive correlations which were large enough to be reliable.

Factors Influencing Activity. How much, if any, influence the mother's activity has on fetal activity has been investigated by Schmeidler (1941). Acting as her own subject, Schmeidler recorded the time of each fetal movement, the location of the movement in her abdomen, and the intensity of the movement. The experiment was carried out from approximately the fifth to the seventh month of pregnancy.

Of the 42 experimental periods, 33 followed normal waking activity and 9 followed a night's sleep. She found that the number of fetal movements increased during pregnancy. Following maternal activity,

the number of fetal movements was smallest during the first 5 minutes, gradually increasing until, after about 30 minutes, there were approximately as many movements as after sleep. It was suggested that the decrease in fetal activity after maternal exercise is due to the increased supply of oxygen available to the fetus at that time.

How different prenatal conditions affect the activity of the fetus has been investigated by Richards *et al.* (1938). They found that fetuses were equally active when the mother was occupied in any way but eating. During the lunch period, the activity of the fetus was significantly less. Sontag and Wallace (1936) report that sudden feelings of fear or anger on the mother's part produce almost immediate and marked increases in the number and violence of fetal movements. More frequent and more violent movements occur when the mother is severely fatigued.

SENSE ORGAN DEVELOPMENT

It is almost impossible to study and test the senses of the fetus. For that reason, data concerning them must come from a study of the developmental condition of the senses at birth. Even after the fetus is removed from the mother's body, the senses are hard to study because the responses made are so restricted that they are difficult to interpret. Preyer (1937), from data obtained from a large number of observations and experiments, was convinced that the sensitivity of the embryo begins later than does the motility.

In the uterus, sensations are probably not experienced, owing to the constant conditions within the uterus which would make stimulation of the sense cells impossible. For example, the amniotic fluid in the mouth and nostrils would prevent the reception of taste and smell stimuli. As temperature and light conditions are constant in the uterus, stimulation of these senses is impossible until after birth.

A brief summary of the state of development of the different sensations during the prenatal period brings out the following facts:

1. *Cutaneous Sensitivity.* This begins in the oral-nasal region, involving the mucous membrane of the nostrils and the red of the lips. Skin sensitivity develops by spreading over the head region and then progressively over the whole surface of the body.

2. *Temperature.* In prematurely born infants, the temperature sense is much the same as in normal, full-term infants. They react less strongly to stimuli warmer than the body than to stimuli cooler than the body at the time the stimuli are applied.

3. *Pain.* The pain sense is little developed during the prenatal period. Even when a prematurely born infant is stimulated until blood comes, little or no response is made.

4. *Taste.* The taste buds begin to develop during the third fetal month and are more widely distributed in fetal than in adult life. They are to be found not only on the tongue but also in the hard palate, the tonsils, and parts of the esophagus. Later they are limited to the tongue. Even though the taste mechanism is present before birth, there is no adequate stimulation of this sense until after birth. In prematurely born infants, sweet is distinguished from salt, sour, and bitter.

5. *Smell.* So long as the nasal cavity is filled with amniotic fluid, as it is during the entire prenatal period, there can be no adequate olfactory stimulation, and olfaction does not occur in its normal form until the nasal cavity is filled with air. Smell reactions in the premature, however, show that the smell mechanism is well developed.

6. *Vision.* The eye begins to develop during the second or third week of embryonic development. No stimulation, however, is possible before birth. In the prematurely born, specific reactions to light and pupillary reflexes occur. Eyelid reactions and eye movements occur before birth.

7. *Hearing.* The auditory mechanism is well enough developed that it could function before birth, but the infant remains partially deaf until the Eustachian tube of the ear is opened and the gelatinous liquid of the fetal middle ear is drained out. This occurs shortly after birth, owing to breathing and crying, which help to drain the passage. The fetus, as is true of the newborn, is deaf to sounds of normal intensity. Only strong sounds that can pass through these mechanical blocks can bring forth reactions. In the experiment of Sontag and Wallace (1935*a*), referred to earlier in the chapter, it was found that responses to sound stimuli, produced by doorbells, buzzers, and wooden knockers struck against a disk attached to the mothers' abdomen, could be detected at the beginning of the thirty-first week of intra-uterine life. The responses increased in magnitude as the fetus neared full term.

When vibrating stimuli of a frequency of 120 beats per second were applied to the mother's abdomen, Sontag and Wallace (1936) noted changes in fetal heart rate. This response developed about the beginning of the twenty-ninth week and increased by the month until birth. Kellogg (1941), commenting on the reports of Sontag and Wallace's findings, raised the question as to whether the stimuli received by their subjects were auditory or were actually tactual in nature.

Forbes and Forbes (1927) report that there is good evidence that the human fetus 4 or 5 weeks before birth can respond with sudden movements to a loud noise originating outside the mother's body. Kellogg (1941) studied the response of one fetus to a shot from a .32-caliber revolver fired 2 feet distant from the outer surface of the abdominal wall. In more than a dozen attempts to produce an observable startle reaction

in the fetus to this noise, the results were negative except at the fetal age of 234 days, when there was some evidence of a responding movement. Spelt (1938) was able to condition fetuses to loud noises during the last 2 prenatal months.

To answer the question whether the fetus hears *within* the uterine environment, Bernard and Sontag (1947) produced sounds near the mother's abdomen. They found that the fetus was capable of perceiving a wide range of tones. This was indicated by responses expressed in sharp body movements and cardiac acceleration. Whether tonal perception is accomplished by means of the auditory apparatus or whether it represents a vibratory perception sense of other parts of the body, they were not able to establish.

MATERNAL IMPRESSIONS

From the time of primitive man, traditions have been widely accepted by educated as well as by ignorant members of society which hold that the mother, during the pregnancy period, can mark her baby by the thoughts, emotions, or experiences she has at that time. This "marking" of the baby was believed to result from "thought transference" or some mysterious nervous relationship between mother and fetus. There are many accounts of terrors due to black cats or burglars or overindulgence in certain favorite foods told as conclusive proof of the cause of birthmarks and other forms of disfiguration on the infant's body. Even though science has gone far in clearing up these superstitious beliefs, many of them still persist. They are not trivial, nor should their effects be treated lightly. They influence the thinking of women and this often interferes with medical care during pregnancy and at the time of birth.

Our present-day medical knowledge of the relationship between the body of the fetus and that of the mother furnishes us with evidence to disprove these old superstitions. There are three distinct lines of evidence to show that maternal impressions cannot cause abnormalities. These are (1) the fact that abnormalities usually come after the first two months of prenatal development, when the embryo's body is fairly well formed and, as a result, less liable to be deformed; (2) the fact that the same types of abnormalities are found in most of the lower animals, where, because of the low level of development of the nervous system, maternal impressions do not exist; and (3) the fact that there is no direct connection between the mother and the fetus, and hence, the mental, emotional, or nervous condition of the mother can have no direct effect whatever on the fetus.

Even though science is unable to explain all congenital deformities or marks, there is still no justification for accepting superstitions and tradi-

tions which have no evidence of truth to back them up. At the present time, medical science has been unable to discover the causes of many common diseases, such as common colds, cancer, and polio. In spite of this fact, we do not feel justified in accepting any explanation that may have been handed down from the past. We wait until there is evidence of a reliable sort to show just what the causes are.

Causes of Abnormalities. Abnormalities in the human fetus are brought about by two types of causes, *intrinsic* and *extrinsic*. The intrinsic causes are due to inheritance or to disturbance or disease of one or more of the endocrine glands. Extra fingers or toes, for example, are caused by inheritance, while giantism, dwarfism, and cretinism (mental deficiency accompanied by physical deformities) result from abnormal functioning of the endocrine glands, especially the thyroid and pituitary glands. The extrinsic causes include any severe disturbance in the environment of the embryo or fetus due to malfunctioning of the placenta. Deficiency of vitamins or minerals from the mother's blood and poisonous substances from an oversupply of endocrine secretions, excessive use of drugs or alcohol, or from venereal diseases are all illustrations of extrinsic factors. These affect the fetus indirectly by making proper nourishment of it impossible.

FACTORS INFLUENCING PRENATAL DEVELOPMENT

There are many popular superstitions, such as the maternal impressions discussed above, concerning the factors that are believed to influence prenatal development. But unfortunately there has been little scientific research along these lines. It is generally believed that variations in the diet, health, and glandular secretions of the mother during pregnancy, which influence the chemical condition of her blood stream, have a marked effect on the developing fetus. At the present time, information regarding these influences is very slight. It is difficult, and at times impossible, to tell whether an effect produced comes from one factor or another.

Most information available comes from the abnormal development of the fetus itself or from experimentally induced structural changes in lower animals. It is impossible to study the normal human fetus experimentally by changing environments to see what effect these changes have on the development of the fetus. This technique has been used with animal subjects experimentally to produce *monsters* by the use of changed environmental conditions involving the use of cold water, chemicals, insufficient oxygen, ultraviolet rays, etc. Two-headed monsters among tadpoles can be produced, for example, through the use of chemical or mechanical stimuli. By adding magnesium chloride to water, the eyes of minnows can be displaced. Changed environmental conditions change

the rate of development, thus altering the balance of growth among the different parts of the organism.

In the case of human beings, the germ cell, whether male or female, may be injured before conception, and the offspring resulting from it will thus be affected. Nature takes care of many of these abnormal cases by miscarriages or stillbirths. During pregnancy, however, a healthy fetus, made up of the union of a healthy ovum and healthy spermatozoon, may be affected adversely by unfavorable factors in the prenatal environment. The effect on the developing fetus will be either retardation in development or development of an abnormal type.

Experimental studies have shown that the period in the development of the fetus at which the agent is introduced, rather than the agent itself, is the determining influence in producing abnormalities. The rate of development, when changed by some foreign agent, alters the course of growth in the different parts of the organism and abnormalities result. In the early part of the prenatal development, during the periods of the ovum and of the embryo, any disturbance to the normal course of development is more serious than later on because, in these early stages, the different parts of the human organism are taking form. After they have appeared, interferences to normal development are less serious.

The most important factors influencing the prenatal development of the human infant are

1. Food. As the growth of the fetus is most rapid during the latter part of pregnancy, the mother's food is most important at that time and should be selected to fill the requirements of the fetus. The fetus needs proteins for tissue building and repair, fats to form tissue fats and fuel for the body as well as a surplus to store in body fat as a reserve, and carbohydrates for strength and energy.

When the mother is seriously malnourished or undernourished, so that the fetus does not receive from the maternal blood stream the needed elements of nourishment, prenatal growth is hindered. Malnutrition, resulting in vitamin deficiency, is more serious than insufficient food. The effect is either some physical abnormality such as rickets, nervous instability, general physical weakness, or mental deficiency of a more or or less pronounced sort.

The severe hunger from which women suffered during the siege of Leningrad by the Germans from 1941 to 1943 affected not only their own health but that of their babies, according to Antonov (1947). The stillborn rate rose 5.6 per cent during the particularly severe hunger in the first half of 1942. This was twice the normal percentage. The rate of premature births reached 41 per cent, also abnormally high. Generally lowered vitality and frequent congenital softening of the skull bones were

also reported. Antonov concluded his report with the statement that "severe quantitative and qualitative hunger of the mother decidedly affects the development of the fetus and the vitality of the newborn child."

The general undernourishment prevalent in Rotterdam and the Hague during the winter of 1944 to 1945 was found to effect the prenatal development of infants. Smith (1947) reported a decrease of birth weights and, to a lesser extent, in the birth lengths of infants born during that period. Stillbirths and neonatal mortality were not, however, increased. When the maternal food supply was increased, birth weight and length returned to their previous normal levels.

2. Diseases. Any diseased condition of the mother that affects her general metabolism will influence to a certain extent the development of the fetus. The diseases believed to be the most serious are (*a*) *Syphilis*, which is often called "the great slayer of the unborn." This frequently causes miscarriages, stillbirths, congenital mental deficiency, blindness, or deafness. Toxins of syphilis in the blood of either parent may injure parts of the germ cells before fertilization, or the fetus may become infected before or at the time of birth. The result is likely to be a physically or mentally defective child. (*b*) *Gonorrhea*, which is frequently called "the great sterilizer," because it is a very potent cause of sterility in both men and women. This disease may infect the baby's eyes when it passes through the birth canal and thus cause "congenital blindness." Because of this, most states have laws requiring the use of some prophylactic for all babies, usually one drop of 1 per cent solution of silver nitrate in the eyes of the newborn. (*c*) *Endocrine disorders*, which are thought to have pronounced influence on the development of the fetus, but medical information of a reliable sort is still very scanty. When there is a thyroid deficiency, the younger the fetus the more pronounced the symptoms of abnormal development. Bones and cartilage, except the skull; fail to develop; the abdomen protrudes and becomes large and flabby, the skin is rough and coarse; the hair is shaggy; and the intellectual development is subnormal. A pronounced condition of thyroid deficiency is known as "cretinism." (*d*) Prolonged or *wasting* diseases of the mother, such as tuberculosis and diabetes, have effects on the fetus similar to those of malnutrition. (*e*) *Toxins* or poisons in the mother's blood, coming from lead or phosphorus from certain occupations, such as paint and pottery manufacturing, and bacteria from certain diseases are known to influence detrimentally the developing fetus. Lead poisoning causes abortions, deaf-mutes, and other deformities. (*f*) *X ray* and *radium*, when used in too small amounts to end the growth of an animal fetus, nevertheless bring about changes in the offspring and affect the

succeeding generation. The use of X ray or radium on the maternal pelvis during the childbearing period may produce, according to Murphy, Shirlock, and Doll (1942), no effect on ovulation, temporary sterility, or permanent sterility. No harmful effects to the health or development of the children subsequently born occur in cases of temporary sterility. When irradiation is used during pregnancy, the effect depends partly on the strength of the radium or the X-ray exposure and partly on the age of the fetus.

When exposures are used early in pregnancy for therapeutic purposes, they are generally of greater strength. This is likely to have severe effects on the fetus, the most common of which is microcephaly, or an abnormally small head and brain, with accompanying mental deficiency. If used at the end of pregnancy for diagnostic or measurement purposes, the exposures are of short duration and have no effect on the fetus.

3. Alcohol. Because of the present social tendency for women to drink, there are many theories but little scientific evidence regarding the effect of alcohol on the offspring. Even if it is not used by the mother, the male germ cell may have been weakened by alcohol before fertilization occurs. This in turn causes mental deficiency or nervous instability in the offspring.

Experiments carried out on animals give a clue as to what to expect when the fetus is subjected, in one way or another, to the influence of alcohol. Arlitt (1911) fed alcohol to male and female rats once a day for periods varying from 16 days to 6 months. She found a marked retardation in the rate of growth of the rats as compared with that of normal rats of the same age. The effect on growth was found to extend to the third and fourth generations of the rats thus fed. Alcohol was also found to produce partial or complete sterility, depending upon the size of the dose given. When conception occurred, there was an increase in the number of stillbirths and infant mortality.

Stockard (1931) reports an experiment in which pregnant guinea pigs were treated with fumes of 95 per cent ethyl alcohol. The animals subjected to this treatment showed mortality among their offspring at the rate of 195 against 100, as compared with a control group not subjected to this treatment. The prenatal deaths among the offspring of the treated parents were 2⅔ times greater than the postnatal deaths, 70.3 per cent against 29.7 per cent. The second generation of offspring of the guinea pigs treated with alcohol fumes likewise showed a high prenatal mortality.

In the human being, owing to the fact that the fetus obtains nourishment from the maternal blood stream, it is obvious that the constant introduction into the blood stream of chemical substances which impose

a burden of accommodation on the physiological mechanism of the mother must, in one way or another, impose a burden on the fetus. When the limits of accommodation are exceeded, there are certain "danger signals," such as nervousness, wakefulness, or irregular heart action, which show that as the mother is being affected detrimentally, the fetus is likewise affected. Even a moderate intake of alcohol is apparent in minimal quantities in the milk secretion of the mother.

Pearl (1930) maintains that "alcohol acts as a definite but not too drastic selective agent upon both germ cells and developing embryos, eliminating the weak and leaving the strong." Pearl quotes an investigation by Polisch in which he says that "in a group of very heavy, steady drinkers there was not the slightest evidence of demonstrable germinal injury of the offspring." According to Jennings (1930), "The genes show a very great resistance to alcohol. Either it does not alter them at all, or it kills them; in either case no modified descendants result."

4. Tobacco. Tobacco contains nicotine, a powerful narcotic poison. When inhaled, its effects are more injurious than in ordinary smoking because of the disturbance of blood pressure and heart action. General resistance to infections is lowered, especially in the mouth and throat.

Sontag and Richards (1938) reported that for 30 fetuses, during the last 6 months of pregnancy, cigarette smoking by the mother was followed by an increase in fetal heart rate. The maximum effect appeared from 8 to 12 minutes after the cigarette was begun. In animals, such as the cow and the cat, nicotine has been found to lessen milk secretion. There is no definite scientific evidence at this time to show that this is true for the human mother.

5. Emotional Experiences of Mother. There are many traditions relating to the effect of the mother's emotional experiences on the growth of the fetus. Some of them go so far as to hold that, if the prenatal period is predominantly a happy one for the mother, the disposition of the baby will be made cheerful and happy. A prenatal period, on the other hand, marked by emotional disturbances, fears, and worries will, it is believed, result in a morbid, sad, introverted personality for the baby. Too little scientific knowledge relating to this problem is available at the present to be conclusive. If the emotional experiences of the mother influence the developing fetus in any way, it is through the glandular changes which take place in her body during the prenatal period.

6. Age of Parents. Whether the age of the parents has any influence on the development of the fetus has never been proved scientifically. Studies relating to the age of the parents and the intelligence of the child show that older parents have more intelligent children than have younger parents. This, however, may be due to the social level of the parent

and not to age. In the higher social classes, where the average intelligence quotient is highest among the children, there is a tendency to marry later because of the long period of training necessary to prepare both men and women for their life occupations.

Steckel (1931) reported that children born of young parents were less intelligent than children born of more mature parents. Below the ages of 26 to 28 years for mothers and 30 to 32 years for fathers, the mean intelligence rating of the children decreased. Terman (1925) found that the average age of fathers at the time of birth of superior children was 33.63, while the average age of their mothers was 29.01 years.

The relationship between age of parents and genius was investigated by Ellis (1904), who discovered that in the case of 299 eminent men, the average age of the fathers at the time of the birth of the sons who later became eminent was 37.1 years, while that of the mothers was 31.2 years. Galton (1914) found the average age of the fathers of eminent men to be 36.0 years, and Yoder (1894) reports 37.78 for the fathers and 29.8 for the mothers.

When a difference in the age of parents exists, what effect has it on the intelligence of the children? Ellis (1904) reported that a mean disparity in age of 7.17 years existed in the case of the parents of his British geniuses. Steckel (1931), on the other hand, found that parents whose ages approached each other tended to have more intelligent children than those between whom a large age difference existed. Data available on this subject are too limited for definite conclusions, but there are indications that there is a tendency for parents of approximately the same age to have more intelligent children than there is for those who are widely different in age.

7. Month of Birth. Whether or not the month of birth has any influence on the developing fetus has been the subject of a certain amount of speculation, as well as of scientific investigation. Blonsky (1929) contends that the month in which a child is born has some influence on his mental as well as on his general bodily development. This, he believes, is shown by the fact that larger numbers of repeaters in the schools are born in late fall and winter than at other seasons, with the months of October to December producing the largest numbers. The smallest number of repeaters was found to come in the case of children born in March, April, and May. Likewise, the mean intelligence quotient was lowest for the children born during the late fall or winter months and the highest for children born in the spring.

Pintner (1931) studied 4,925 school children of all ages to test Blonsky's contention that the month of the year in which the child is born has some influence on his development. He found no real relationship between

the intelligence-quotient score and the month of birth. The winter months of February and March were slightly less favorable than the other months, but the differences were too small to be significant. Working with Forlano (1934), Pintner studied the birth months of eminent men taken from samples from *Who's who in America, American men of science*, and other similar records. "In all, 25,166 cases were studied. They found that the largest percentage of eminent men were born in October. When seasons instead of individual months were studied, the summer seasons, including July, August, and September, produced the largest percentage of eminent men, while the lowest percentage of eminent men were born in the spring, a finding contradictory to that of Blonsky." In all cases, the differences were very small.

More recently, Pintner and Maller (1937) analyzed intelligence-quotient scores in relation to birth month for three ethnic groups, Italians, Jews, and Negroes. In each case, small but statistically significant differences were found in favor of those born in the late spring, summer, or fall. Fialkin and Beckman (1938), in a study of male adults, found a difference of less than 3 I.Q. points between those born in winter and those born in the months of warmer temperature. This difference was in favor of those born in the spring. Peterson (1936) reported to the members of the National Academy of Science a study based on statistical evidence from *Who's who in America* and similar publications. His report covered 25,000 cases, and the results showed that individuals conceived during the first half of the year are likely to be more exceptional in their mental make-up than are those conceived during the last half.

Huntington (1938) combined data for 3,000 children having I.Q.s of 130 or more with Pintner and Forlano's data. He reported that children of low and median social status, with average I.Q.s of 93 and 101 respectively, show February as the most frequent month of birth. Those of high social status, averaging 115 I.Q., have the greatest incidence of births in March and April, while those with I.Q.s over 130 show a distinct peak in April. In a comparison of samples of children born in the winter season in the Southern Hemisphere with those born in the Northern Hemisphere during the winter, Pintner and Forlano (1939) found that in both samples the mean I.Q. was somewhat lower than that of children born in the other seasons.

Pintner and Forlano (1943) critically analyzed the studies of mental difference as related to seasons of birth. Of the 11 studies they examined, the highest mean I.Q. was found among children born in the spring and summer, and the lowest among those born in autumn and winter. Some of the investigators attributed these differences to chance; others to

physical factors, as temperature and sunshine; and others to the health or vitality of the mother or the child.

They concluded that there is a "strong suggestion of a slightly lower mean intelligence among individuals born in the winter-autumn half of the year, the colder-darker months, as compared with a slightly higher mean intelligence for individuals born in the spring-summer half of the year, the warmer-lighter months." Because the differences in intelligence are slight, they caution that in many cases they may not even approach statistical significance.

TEXT-FILM

The following McGraw-Hill Text-Film is recommended for use with Chapters III and IV.

Heredity and Prenatal Development (16mm sd MP 2 reels). Step-by-step picturization of growth, subdivision, and eventual union of male and female sex cells. Discussion includes explanation of chromosomes and genes in determining sex and in transmitting physical and mental characteristics to offspring. Stress is laid on the modification of these traits by training and environment. The film describes the fertilization of the ovum by the sperm cell at conception and traces the development of the fetus until delivery. The section of the film on the newborn considers the development of the basic physiological actions of breathing, eating, and elimination. Stresses close connection between physical and emotional sensitivity in very young children.

Silent follow-up filmstrip, based on material contained in the motion picture, offers opportunity for review, testing, and further discussion.

CHAPTER IV

THE NEWBORN INFANT

Infancy, or the period of the newborn, is a plateau stage in development. At this time, the infant must make adjustments to a completely new environment, outside of the mother's body. During the first few days after birth, the infant usually loses weight. Gradually, toward the end of the first week, as he becomes adjusted to his new environment, the infant starts to regain the weight lost immediately after birth, and this is usually accomplished by the end of the second week. Changes during this period are comparatively slight; no marked development occurs until the weight lost after birth has been regained.

Period of the Newborn. According to medical standards, the period of the newborn extends from birth to the end of the second week, or until the navel is healed. Infancy is generally subdivided into two periods the *period of the partunate* and the *period of the neonate.* The *period of the partunate* consists of the first fifteen to thirty minutes of life, including the time during and immediately after parturition or birth. It covers the time when the infant ceases to be a parasite, with the cutting of the umbilical cord, and becomes for the first time, a separate, distinct, and independent individual. The *period of the neonate* covers the remainder of the infancy period and is characterized by the making of adjustments essential to a life free from the protections of the intra-uterine environment. (The term "neonate" is derived from the Greek word, "Neos," meaning "new," and the Latin verb, "nascor," meaning "to be born.")

Before making a survey of the outstanding characteristics of the newborn, it must be understood that in different infants the state of development at birth differs greatly. The greatest differences are to be found in abnormal cases and premature births. At birth, many infants show capacities which in others do not develop for weeks or months. For that reason, one is justified in assuming that entrance into the world does not signify the same starting point of development for all human beings. It is only logical to suppose that, as the premature infant is smaller than the mature or postmature one, his mental development is also below the average. The description of the newborn, given in this chapter, will therefore, refer only to the normal, 10-lunar-month

infant. What scientific knowledge there is of individual variations will be emphasized.

SCIENTIFIC PROCEDURES IN STUDYING THE NEWBORN

As the interest centered on the arrival of a baby in any household is always great, one could justifiably assume that the newborn infant had been carefully and systematically studied from every possible angle. This, however, is not the case. While interest of a sentimental sort has existed, attempts on the part of the psychologist to make impersonal, objective studies of the human being at this age have often led to opposition from both parents and physicians, but in recent years a number of scientific studies of the newborn have been made, first in Germany and, more recently, here in America. These have been limited in scope and have emphasized only a few aspects of the birth equipment, such as the physical and sensory development. Little attention has been given to a study of the mental and emotional development.

Baby Biographies. Among the pioneer studies of the newborn are many biographical studies based on the observations of single infants. These followed closely the pattern set by Preyer (1888) in his *Mind of the child*. The main emphasis in these studies was on the sensory and reflex development present at birth. Most of the biographies were made from records kept by parents or close relatives, and the tendency to interpret findings or to read meanings into the infant's behavior militated against their scientific accuracy.

Group Studies. The first group studies of the newborn were made in Germany by Kussmaul, Genzmer, and Kroner. These were carried out in maternity hospitals and were limited almost exclusively to an investigation of the state of development of the infant's sensory equipment at birth. Later, as an outgrowth of animal psychology, a number of observations of groups of newborn infants were made to determine birth equipment along lines other than those of sensory development. To increase the scientific accuracy, 24-hour observations have been made in experimental nursery laboratories by trained psychologists.

In America, one of the earliest of the group studies, modeled along the lines of the German investigations, was that of Peterson and Rainey (1910). Over 1,000 newborn infants were examined by them to determine the sensory equipment present at birth. J. B. Watson (1925*a*) at the Phipps Clinic of Johns Hopkins Hospital turned his attention to the study of reflexes, the so-called "instinctive equipment" and emotional development present at birth. Sherman (1924) and Blanton (1917) carried out experiments similar to those of Watson.

Continuous Observations. Recently, a few observations repeated over a continuous period of time, with minute-to-minute records and carefully controlled environmental conditions, have been made. In Vienna, Bühler, Hetzer, and Tudor-Hart (1927) noted continuously, 24 hours a day and under controlled conditions, the activities of 69 babies for one month. At The Ohio State University, Pratt and his assistants

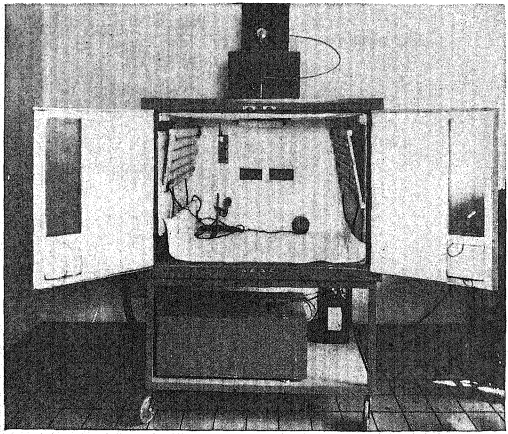

FIG. 16. The experimental cabinet used in infant research. *(Courtesy of F. C. Dockeray of The Ohio State University.)*

(1930) observed 25 babies of two weeks of age or less, under conditions in which the external stimuli were kept quite rigorously constant during periods of 5, 10, and 15 minutes in length. The infants were observed in an experimental cabinet (see Fig. 16), lighted from within, soundproof, with regulated temperature and humidity, and equipped with a stabilimeter platform on which all gross bodily movements were recorded. This was done by placing the platform on ball bearings so that every time the infant moved, the platform wobbled. The movements were then recorded on a roll of paper moving at a constant speed. Irwin (1930), following along the same general lines as Pratt, observed continuously four infants from birth to ten days of age.

In the following pages of this chapter, a cross-sectional view of the infant will be given to show what the birth equipment of the human

being is. From this inventory, the reader may see how limited the equipment is at the beginning of the postnatal period and how much development must take place after birth.

STAGE OF PHYSICAL DEVELOPMENT AT BIRTH

The average weight of the newborn is 7.5 pounds and the average length, 19.5 inches. Weight ranges from 3 to 16 pounds, and length, from approximately 17 to 21 inches. Montague and Hollingworth (1914) found that the average male infants they studied were slightly larger than the average female infants in all anatomical measurements, but these differences were not great. Variability in weight and length is also dependent to a greater or less extent upon variations in prenatal development, especially as it is influenced by prenatal feeding.

Physical Proportions. The physical proportions of the infant differ greatly from those of the adult (refer to Fig. 3). The infant's head is about one-fourth of the entire body length, while in the adult, it is one-seventh. The part of the head where the greatest disproportion exists is in the area above the eyes, the cranial region. In the infant, the ratio between the cranium and face is 8:1, while in the adult it is 1:2. The infant's face appears to be broad and short because of lack of teeth, the undeveloped condition of the jaws, and the flatness of the nose. The arms, legs, and trunk are small in relation to the head. The abdominal region of the trunk is large and bulging, while the shoulders are narrow, just the opposite of the adult proportions.

The relative proportions of the infants' and adults' bodies is emphasized by the following ratios:

RELATIVE PROPORTIONS OF INFANT AND ADULT BODIES

Head of infant:head of adult::1:2
Trunk of infant:trunk of adult::1:3
Arms of infant:arms of adult::1:4
Legs of infant:legs of adult::1:5

Infantile Features. The eyes of the newborn are bluish gray, but this color gradually changes to whatever the permanent color may be. Though almost mature in size, they are uncontrolled in motion and roll in a meaningless fashion without relation to one another. The tear glands are inactive, and therefore crying is not accompanied by a flow of tears. The neck is so short that it scarcely exists, and the skin covering it lies in deep folds or creases. A heavy growth of fine-textured hair often covers the head.

The muscles of the newborn are small, soft, and uncontrolled, with those of the legs and neck less developed than those of the arms and hands. The bones are composed chiefly of cartilage or gristle and con-

sequently are soft and flexible. The flesh is firm and elastic, while the skin is soft, deep pink in color, and often blotchy, especially in the head region. Sometimes a soft, downy growth of hair is found on the body, mostly on the back, but this soon disappears.

Physiological Functions. Before birth, as was pointed out in Chap. III, the human being is a parasite, totally dependent upon its mother for existence. Respiration, nutrition, and elimination are carried on through interchanges in the membranes of the placenta. The birth cry brings about an inflation of the lungs, which, in turn, starts up respiration. When the infant is hungry, or when the lips are touched, reflex sucking movements occur. Within a few hours after birth, elimination of waste products from the infant's body takes place. Thus it is apparent that these three important physiological functions of the human being are established within a few hours after birth.

The physiological functions of the infant differ greatly from those of the adult. The blood contains fewer red corpuscles and more white corpuscles than in the adult, and hence the infant's resistance to disease is poor. The pulse rate ranges from 130 to 150 beats a minute but drops to an average of 118 several days after birth; the adult rate is 70. The respiration rate is nearly twice as great as in the adult, ranging from 40 to 45 a minute, in contrast with the average adult rate of 18. The heart, compared with the arteries, is small, and must therefore beat more rapidly to maintain normal blood pressure. In a healthy infant, the temperature is higher and more variable than in an adult and is maintained between 98.2 and 99.0°F.

SLEEP OF THE NEWBORN

Sleep is part of the infant's behavior equipment which is present in a completely developed form from the time of birth. The newborn sleeps or dozes from 15 to 20 hours daily, contrasted with 8 hours or less in the case of adults. The percentage of sleeping time in 24 hours has been investigated by Bühler and Pratt, Nelson, and Sun. Bühler (1930) reports that 80 per cent of the 24 hours is spent in sleep, compared with 49 per cent at the age of one year. Pratt, Nelson, and Sun (1930) found that on the day of birth the infants were asleep 64 per cent of the time they were under observation; on the first day after birth, 84 per cent of the time; and on the fourth day, 68 per cent.

Length of Sleep Periods. The sleep of the infant is broken by short waking periods which occur on the average of every 2 hours. Bühler (1930) said that the longest period of uninterrupted sleep she observed in newborn infants was 220 minutes. The waking periods are generally fewer and shorter during the night than during the day. Gradually,

the length of the unbroken sleep periods increases, so that by the end of the second month the baby can sleep for 5 or 6 hours without waking. Infants generally stay awake for the first 2 hours after birth. This is probably due to the medical attention they receive at that time.

The infant is wakened by hunger, pain, and internal sources of discomfort. The only environment stimuli that will disturb him are changes in temperature and very loud noises. In contrast with older children, the infant sleeps more lightly and can be awakened more quickly and easily. He is able, also, to fall asleep more readily. The sleep of the infant reaches its greatest depth during the first hour, while during the second hour the sleep is lighter and can be broken more easily.

Richards (1936) noted that infants were most prone to sleep in the middle of the 3-hour period between feedings. External stimuli proved to be less effective immediately after feeding, during the absorptive period, and during the latter period of violent activity, both of the body and stomach and of "hunger."

Depth of Sleep. Several investigations have been made to determine the depth of sleep of newborn infants. Wagner (1937) stimulated 197 newborn infants in varying degrees of motility with pain, tactual, olfactory, and auditory stimuli. The seven stages of sleep, determined by the duration and extent of responses made in each condition, she listed from deepest to lightest, thus:

1. Infant generally quiet; no eyelid or mouth movement; regular breathing.
2. Infant generally quiet; no eyelid or mouth movement; irregular breathing.
3. Occasional stirs of body members; no eyelid or mouth movement.
4. Infant generally quiet with eyelid movement; infant generally quiet with eyelid and mouth movement; occasional stirs of body members with eyelid movement.
5. Occasional stirs of body members; eyelid and mouth movement.
6. Infant generally active with eyelid movement; infant generally active with eyelid and mouth movement.
7. Infant generally active, with eyes open and mouth movement; occasional stirs of body members and eyes open, with or without mouth movement (p. 58).

Reynard and Dockeray (1939) used almost the same classification. They divided sleep into six stages: Stage I, "deep sleep"; Stage VI, "complete waking," and Stages II, III, IV, and V, "intermediate stages of sleep." The typical sleep curve for the newborn infant, from one-half hour after nursing to one-half hour before the next feeding period, starts at complete waking, or at one of the intermediate stages, descends gradually to deep sleep for 5 to 20 minutes, and ascends slowly to approach complete waking at the end of the period.

In Fig. 17 are shown two typical sleep curves for infants for a period of 50 or more minutes. Both show deep sleep in the middle of the curve.

Sleep Postures. The characteristic method of falling asleep and awakening has been described by Bühler (1930) as follows: "The newborn child twitches in that moment when he falls asleep. . . . Awakening, the newborn child throws his head backward, stretches his arms and body" (p. 119). When placed in a prone position, the posture of the newborn is similar to that of the fetus during intra-uterine life. This

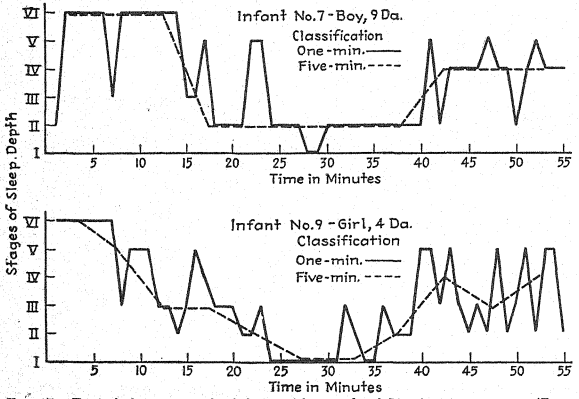

FIG. 17. Typical sleep curves for infants with records of 50 minutes or more. (*From M. C. Reynard, and F. C. Dockeray, The comparison of temporal intervals in judging depth of sleep in newborn infants. J. genet. Psychol.*, 1939, **55**. *Used by permission.*)

was reported by Shirley (1931*a*) to be the case in all the 24 infants studied by her but was found to be outgrown generally by the end of the first month owing to the tonus of the baby's musculature. Movements during sleep increase with age throughout the first two weeks, as is true of the waking period. The infant often smiles during sleep. More variations in sleep posture from one infant to another occur than is generally believed.

MOTOR ACTIVITIES

At birth, the infant is not an inert bundle of skin, bones, and flesh, but is a moving, acting creature. Indeed the movements made are so rapid, varied, and diffuse that at times, especially during waking periods, it is difficult to record every movement of the infant's body. For that reason, records made by the aid of a moving-picture camera or some

other technical device to assist the human eye have proved to be a valuable aid in scientific studies. The moving-picture camera method was first used by Gilmer (1933) to study infant activity and the stabilimeter method by Pratt, Nelson, and Sun (1930) at The Ohio State University (see Fig. 16).

Dennis (1943) raises the question as to whether the newborn infant's repertoire of responses is learned or instinctive. After examining the experimental data dealing with the behavioral development of the fetus at various ages and the opportunities for learning during intra-uterine life, Dennis came to the conclusion that "most of the behavior of the infant at birth is unlearned, and that fetal development is almost entirely a matter of maturation." This is in contradiction to the earlier theories of Holt (1931), Givler (1921), and Hollingworth (1928), who suggested that the neonate's repertoire in its entirety may have been learned during the fetal period.

Mass Activity and Specific Activities. The first activities of the human infant are random, imperfect, and uncoordinated. And yet, within a period of a few years, these movements will, for the most part, be harnessed and controlled to form the basis for the coordinated skills needed in everyday life. In spite of their apparent lack of organization, the motor activities of the newborn may roughly be classed into two descriptive categories, suggested first by Irwin (1930). These are (1) *mass activity* and (2) *specific activities*.

1. *Mass activity* is activity which includes general movements of the whole body. It occurs independently of specific external stimulation, is highly uncoordinated, and is due to the neurological immaturity of the infant. Since this type of activity occurs at too rapid a rate to be observed in its entirety by the human observer, mechanical devices, such as a moving-picture camera or stabilimeter, have been used to enable the observer to get a complete and accurate picture of the movements made.

2. *Specific activities* are activities which involve certain limited areas of the body. This classification includes (*a*) reflexes, definite responses to specific sensory stimuli which remain unchanged with a repetition of the same stimulus, and (*b*) general responses, which may arise from either external or internal stimulus, and which involve larger groups of muscles than are used in reflex responses. They are less specific than the reflexes and vary with the repetition of the same stimulus. This is not true in the case of the reflexes. Because specific activities are segmental, they can be observed and recorded by an observer without the aid of moving-picture cameras or other mechanical devices.

Specific activities are in reality an outgrowth of mass activity. In

the prenatal period, mass activity predominates. When one part of the body is stimulated, the whole body responds. At birth, the same is true. Even in the case of crying, the infant's entire body is active, though crying itself is limited to a small area of the body. As time goes on, and the infant's development progresses, local activities, which are more specific in form, involving only a part of the body, make their appearance.

Objections to Classification. A few objections have been raised to Irwin's classification, described above. Gilmer (1933), after taking moving pictures of newborn infants during periods of spontaneous behavior, analyzed these pictures at different rates of speed. He contended that what Irwin called *mass activity* is actually a combination of identifiable response patterns each with its own characteristic combination of essential "elements." He maintains that there are many total bodily responses in the newborn, and that mass activity is not the only one. Dennis (1932) agrees with Gilmer's point of view and refers to "coordinate responses of many body parts" in his classification of responses of the newborn, of which *mass activity* involving crying and general unrest is only one. In spite of these objections, the classification is worth careful consideration.

1. Mass Activity. When sensory stimuli are applied to any part of the body, motor activity occurs throughout the body but in a most pronounced form in the part of the body stimulated. Movements limited to one part of the body are relatively infrequent, because the immature condition of the nervous system results in a diffusion of energy when a specific stimulus is applied to one area of the body. Delman (1935), with the aid of a moving-picture camera, observed the activities of infants in response to tactual stimulation. He found that the response usually occurred first in the stimulated limb while the second response came in the collateral limb. This, he contended, indicated that some patterning in the responses was present at this early age, even though the activity was not limited to the part of the body stimulated.

Moving-picture studies made by Gilmer (1933) of four infants during the first ten days of life showed mass body movements as an accompaniment to stretching and sneezing. The specific reactions of stretching and sneezing were much the same as in adults, but they were accompanied by generalized, more-or-less-total body reactions, which is not the case in adults when the same reactions occur. The energy expended is thus great because the activity is diffused. It is estimated that the energy expended is 2½ times as great in the infant as in the adult, when pound to pound comparisons are made. Likewise, it is estimated that in crying the infant expends three times as much energy as in sleep because of the greater amount of mass activity in the former compared with the latter activity.

Effect of Body Conditions. Mass activity is related to the body condition of the infant. Great activity occurs during *hunger, pain,* or *bodily discomfort,* while limited activity is present following feeding. The most usual times for mass activity to occur are just before nursing, or between 10 P.M. and 6 A.M. It generally extends over a period of from one-half to five hours. As a rule, it increases from the first to the seventh day, and then decreases.

The following variations in infant activity have been observed by Pratt, Nelson, and Sun (1930):

1. Even when there is no external stimulus present, infants during sleep move 21 per cent of the time.
2. When awake, infants move 42 per cent of the time, and there is an increase for those awake from 37 to 86 per cent.
3. Wet infants are active 30 per cent of the time as compared with 21 per cent of the time when they are dry.
4. The most inactive infants are those who are asleep and dry.
5. When the infant is wet, more activity is aroused, and this is often followed by intermittent crying, during which every part of the body is in action.
6. Infants are active 45 per cent of the time in the morning and 55 per cent of the time in the afternoon.
7. After nursing, most infants are not only asleep but also very quiet. With the approach of feeding time, most infants are awake, restless, and "fussy." When insufficiently nourished, infants are very restless and active.

For 73 infants, Irwin (1932*b*) found the mean number of movements per minute to be 8.7 for *sleeping* infants as contrasted with 51.5 when the infants were awake, or about 6 times more when awake than when asleep. Mobility after *nursing* was much less than just before. The mean number of movements per minute during a 15-minute period after nursing was 17.0 as compared with 45.0 per minute during the 15 minutes preceding nursing. Hunger is doubtless the primary cause of the activity.

Bodily activity, Richards (1936, 1936*a*) found, appears to increase in a curve of positive acceleration during a 3- or 4-hour period between feedings. *Food supply* directly induces lowered bodily activity either through the filling of the stomach or through the supply of food materials to the tissues. As the time since the last feeding increased, there was a positive acceleration in bodily activity. Some relation, Irwin (1930, 1933*a*) noted, does exist between hunger and an increase in the amount of motility during a 3-hour experimental period.

Irwin (1933) correlated the *body temperatures* of 66 infants and their motility. The correlation was -0.02 ± 0.08 or practically zero. There was no significant difference between the amount of motility of the 20 infants having the highest body temperatures and that of 22 infants having the lowest. Motility, Irwin concluded, is therefore not significantly affected by body temperature.

Effect of Environment. Environmental conditions likewise influence the amount of activity that occurs in the infant. Weiss (1934) found that infants responded more to change in *light* stimulation than to the specific light itself. All light stimuli are disturbing and become increasingly so with added intensity. Activity is greatest under minimal light stimulation and least under moderate light. The amount of activity displayed by the newborn is significantly different in darkness from that in light, with less activity in dim than in moderate light.

How dark adaptation affects motility has been investigated by Redfield (1939). Lights of 0.04, 0.09, and 0.4 foot-candles, he found, had a generally inhibitory effect upon the bodily activity of the infants. More infants were quieted by light than were stimulated by it. When dark-adapted first, the number quieted increased as the intensity of the light increased. Crying was inhibited by light following 5 and 20 minutes of dark adaptation, the inhibition coming after the longer dark adaptation period. This, Redfield maintains, confirms other findings that light has an inhibitory effect upon the bodily activity of the infant.

Irwin (1941) light- and dark-adapted his subjects before experimenting to find the effect of light on the amount of body activity. He found a decrease in amount of body activity from darkness to light. As the foot-candles illumination increased, a larger percentage of infants showed decrease in activity. When the infant passed from light to darkness, body activity increased.

Auditory stimuli, Pratt (1934*a*) found, brought about an increase in the general activity of infants. An increase in activity follows an increase in sound intensity or a longer duration of sound stimulation, regardless of whether the infant be awake, asleep, or crying. The pitch of the stimulus affects the response least (Stubbs, 1934). Crying infants respond least to sound stimulation while awake and inactive infants respond most.

The activity of the newborn is hampered by *clothing* and covers. When these are removed, activity increases. On the other hand, there is less crying when the infant is clothed than when unclothed. The effect of clothing and covering of all sorts, such as blankets, is greatest when the physiological factors are most disturbing (Irwin and Weiss, 1934*a*). Bodily activity does not seem to be affected by change in *temperature* between 74 and 88° or by changes in *humidity* between 22 and 90 per cent (Pratt, 1930).

Activity in Different Body Areas. What parts of the infant's body are most active has been studied by Irwin (1930). He found that during the 10-day period of infancy, the average percentage of movements was 4 per cent for the head, 28 per cent for the body, 21 per cent for the arms, 30 per cent for the legs and 17 per cent for sounds.

From observations ranging from 5 to 15 minutes in length, during which time no external stimuli were presented to the infants, Gatewood and Weiss (1930) reported the percentage of movements for the different parts of the infant's bodies. The data are presented in the following table.

TABLE VI. SPECIFIC MOVEMENT GROUPS

Specific Movement Groups	Centiles
Body movements	41.55
Head movements	5.12
Arm movements	15.15
Leg movements	30.25
Sounds	7.93
Total	100.00

Source: GATEWOOD, M. C., and WEISS, A. P. Race and sex differences in newborn infants. *J. genet. Psychol.*, 1930, **38**, 35. Used by permission.

While these percentages differ slightly from those presented by Irwin, there is nevertheless an agreement in that the greatest amount of movement was found in the trunk and legs and the least in the head.

A significant difference between movements of the right and left arms was found by Stubbs and Irwin (1933) in the case of four infants observed by them. Of these four, three moved the right arm oftener than the left. Two of the infants showed more left than right leg movement, and one more right than left. This laterality difference in the frequency of movements of arms and legs they thought might be regarded as the basis for later handedness. Similarly, Valentine and Wagner (1934) report that in the observations of 100 infants made with an apparatus which recorded the tridimensional movements of both the right and left arms, the motility of the right arm typically exceeded that of the left arm throughout the first ten days after birth.

Muscular activity, Richards (1935) reported, raises heat production. A correlation of heat production and muscular activity was found to be .46. Body temperature, however, varies quite independently of heat production and shows only a slight relationship to muscular activity. Likewise, environmental temperature is only slightly related to bodily activity.

When very active, crying infants were compared with inactive infants, a significant increase in heat production was found. This increase Richards found to be as high as 200 per cent over basal heat production. There was also a slight increase in pulse engendered by extreme bodily activity.

Individual Differences. Individual differences in mass activity are pronounced. The more complex the type of activity, the more pronounced are the individual variations. No statistically significant

differences in the activity of male and female infants have been found by Pratt (1932). In this study, which included white and Negro infants of both sexes, it was found that Negro infants are less active than white infants, while male infants are slightly less active than female infants. In individual infants, however, variations in activity depending upon the time of day occur, as may be seen in Fig. 18.

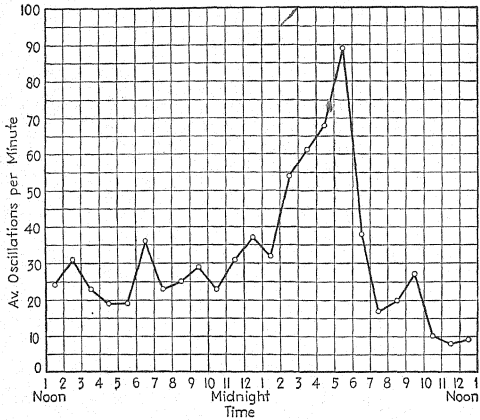

FIG. 18. Variations in mass activity at different times of the day. (*From O. C. Irwin, The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life. Genet. Psychol. Monogr.*, 1930, **8**. *Used by permission.*)

2. Specific Activities. Specific activities of the newborn have been divided into two types, (*a*) *reflexes* and (*b*) *general responses*, for convenience; the distinction is one only of degree. Studies of reflexes have been especially numerous.

a. Reflexes. The outstanding reflexes present at birth or shortly afterward may be summarized as follows: pupillary corneal, conjunctival, lip, tongue, chin, breathing, Darwinian (grasping), Achilles tendon, patellar, triceps, biceps, abdominal, cremasteric plantar, Moro, sucking, visceral, flexion, knee jerk, pharyngeal, heart action, sneezing, Babinski (fanning of toes), and others. Only a few of the reflexes seem to be related to age. Changes to greater or less reaction occur between the

seventeenth and the seventy-fifth hour after birth (Chaney and McGraw, 1932).

The first reflexes to make their appearance are those which have distinct survival value. The patellar, pupillary, and digestive reflexes are all ready to function several months before birth, as may be seen in the case of the prematurely born. Heart action, breathing, and sneezing begin at birth. Sneezing sometimes occurs as the infant is taken from the mother's body and precedes the birth cry. The other reflexes listed above can be aroused within a few hours or days after birth.

The Babinski, Moro-embrace, and Darwinian reflexes appear shortly after birth but disappear within the first months of life. The Babinski, or fanning of the toes, which follows a gentle stroking of the sole of the infant's foot, is generally gone by the age of six months and is never present in normal children after the age of two years. McGraw (1941) made repeated examinations of 75 children from birth to five years of age, to study their Babinski reflex reactions. In the newborn, the reaction involved movements of the entire leg, with a sudden withdrawing of the leg and a fanning of the toes. Several months later, at the age of four months, the speed of the withdrawal response diminished and fewer segments of the leg were involved. Later, around the age of 2½ years, the response was limited to movements of the ankle and toes.

The Darwinian, or grasping, reflex is distinctly weakened by the end of the second month of life. McGraw (1940*b*) studied the ability of 91 children from birth to seven years of age to determine when the Darwinian reflex disappears. She found that the ability to suspend body weight was manifested in almost all newborn infants, but that this ability does not attain its maximum strength until the end of the first postnatal month. After this, there is a rapid decline of the ability until it completely disappears. Then, toward the end of the first year or the beginning of the second, the ability is reestablished and is characterized by the deliberate or voluntary nature of the behavior.

The Moro-embrace reflex occurs when the infant is placed flat on his back and the mattress or table on which he is placed is struck with a forcible blow. The infant throws out his arms in an arc movement, resembling an embrace (see Fig. 19). At first there is marked general bodily response with bowing and clutching movements of the arms and legs. Accompanying or following this is vigorous crying. As time goes on, the amount of general bodily activity is reduced so that by the eighth month the Moro reflex takes on the mature form, which consists of a quick, fine body jerk, accompanied by crying (McGraw, 1932*a*).

Hunt (1939) has differentiated the "startle pattern" from the Moro reflex. The startle pattern is typified by flexion. The eyes blink, the

head moves forward, the shoulders come up and in, the arms flex at the elbows, and there is flexion of the fingers. The leg movements resemble those of the Moro reflex, though the two patterns can be clearly differentiated in the upper limbs.

The startle pattern is elicited mostly by sudden loud noises, though it does come in response to other stimuli of a sudden, intense nature. In an experiment with Clarke, Hunt (1938) found that a mild jab in the

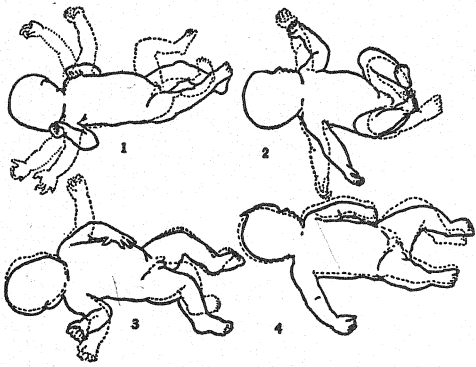

FIG. 19. The Moro reflex. (1) Characteristic bowing posture of the newborn. (2) Reduction in activity, extension and abduction of upper extremities; bowing eliminated. (3) Greater reduction in the degree of action. (4) Characteristic response of quick body-jerk. (*From M. B. McGraw, Growth: a study of Johnny and Jimmy. Appleton-Century-Crofts*, 1935. *Used by permission.*)

thigh with a pin did not produce a startle response. In only one infant did a puff of air on the face produce a startle.

Photographs of 14 infants, from birth to the age of twenty weeks, were made by Clarke (1939) to show the bodily responses of these infants to an auditory startle stimulus. During this period, there was a gradual breakdown of certain elements in the Moro response. The movements became less intense; the pattern changed to one that was primarily flexory in character; and certain secondary movements, such as the subsequent clasping response of the arms, had died out. By the twentieth week, the primary response had changed in all the subjects.

b. General Responses. What are often called "general responses" are those that involve larger portions of the body than the so-called "reflexes" but, like the reflexes, are present at birth. They too are direct responses

to stimuli, whether external or internal. The most common of these are

1. Visual fixation on light. During the first day of life, the infant can focus his eyes momentarily on a light held in front of him. Eye movements are, on the whole, very uncoordinated at first.

2. Spontaneous eye movements. These consist of opening the eyes and rolling the eyeballs from side to side, with little or no coordination.

3. Shedding tears. Occasionally, tears are in the eyes at birth. Generally, however, the first show of dampness around the eyes appears from the thirteenth to the sixteenth day after birth.

4. Feeding responses, such as sucking, swallowing, tongue, cheek, and lip movements. The feeding reactions are called forth by a direct stimulation in the region of the mouth, whether it be the touch of a nipple or some object unrelated to food.

5. Sucking fingers. This form of reaction appears as early as 20 minutes after birth.

6. Yawning. This often occurs within the first hour after birth and can be aroused by touching the lips or chin.

7. Hiccuping. This reaction often appears during the first few hours of life.

8. Rhythmic mouthing movements. Often, during sleep, the infant will open and shut his mouth rhythmically and, in many instances, the tongue will protrude for as much as half an inch.

9. Slight frowning and wrinkling of the brow. This generally occurs during sleep.

10. Turning and lifting the head. When placed either in a prone position or on their backs, infants can lift their heads slightly on the first day of life. This enables them, when prone, to free their noses for breathing.

11. Sitting. When the infant is placed in a sitting position, the flaccidity of his body results in a fall forward into a closed-jackknife position. Several days later, he shows slight resistance to the forward fall.

12. Turning movements. The infant can turn his body slightly by kicking and squirming, but this is not strong enough to enable him to turn from back to side or from face to back.

13. Hand and arm movements. When the infant is asleep, as well as when he is awake, the arms and hands are in almost constant motion. The arms are waved around in a random, aimless fashion and the hands are opened and shut for no apparent purpose.

14. Prancing and kicking. If the infant is supported at the axillae, so that the body weight can rest on the feet, "prancing" movements occur. When the infant is given something to kick against as he lies on his stomach, a few vigorous kicks will push him forward an inch or so.

15. Leg and foot movements. The infant often stretches his toes for no reason other than the mere enjoyment he derives from it. Kicking is very pronounced during infancy and is usually alternate and rhythmical.

As can be seen from the above list, the infant is capable of a large repertoire of activities. What is characteristic of these activities is that, in varying degrees, they are undefined, aimless, and uncoordinated. They are, however, the basis from which we shall see skilled actions of a highly coordinated type gradually developing as a result of baby and child's learning.

Body jerk is an example of a general response in the newborn. According to Wagner (1938), a body jerk is any sudden jerk or tensing of the trunk, plus limb movements. In an analysis of 368 body jerks of 97 infants, Wagner found that jerks are so variable from infant to infant that they cannot be classified into any well-defined patterns. Specific vocal, head, eyelid, mouth, and other facial movements are not essential factors in the body jerk. Deep inspiration occurs in about two-thirds of the cases. Body jerks were found to be most frequent during the first few days of life and during deep sleep.

VOCALIZATION OF THE NEWBORN

The Birth Cry. The birth cry, which appears at the birth or shortly afterward, marks the beginning of vocalization. This is purely reflex at first and is caused by air being drawn rapidly over the vocal cords, thus setting up vibrations in them. Many fantastic interpretations have been given to the birth cry. Kant referred to it as "a cry of wrath at the catastrophe of birth"; Adler has explained it as an indication of the infant's sudden and overwhelming feeling of inferiority at being placed in so new and complex an environment. In reality, of course, the significance of the birth cry is primarily physiological. It serves two purposes: to supply the blood with sufficient oxygen and to inflate the lungs, making breathing possible.

Crying in the newborn, according to Irwin and Chen (1941), is characterized by regularity of breathing. The mouth is opened wide, usually in a rectangular shape, the tip of the tongue is elevated, the muscles of the face are strongly contracted, and the eyelids are tightly closed. The sound made by the infant is uttered with force and loudness.

Variations in the Birth Cry. The birth cry differs from infant to infant and is, to a certain extent, influenced by the type of birth, as well as by the physical condition of the infant. In the quick, expulsive form of delivery, the cry is sharp and deep. On the other hand, in cases of premature birth, or in cases of infants who are in poor condition, a little moan generally accompanies each inspiration. Prolonged labor, resulting in the exhaustion of the infant, is generally accompanied by a weak, short, intermittent cry.

Changes and Developments. During the first 24 hours after birth, the infant's cry may take on different meanings according to the pitch, intensity, and continuity of the cry. In general *discomfort,* the cry at first is monotonous in pitch, staccato-like, and intermittent; then gradually, unless some relief is given, the cry becomes more incessant. *Pain* is characterized by a cry which rises in pitch. If pain is accompanied by increasing physical weakness, piercing tones give way to low moans.

In *rage*, the cry is longer, the breath is held, and the infant's face often becomes purplish. Gulping sounds, which generally accompany the rage cry, result from the opening of the infant's mouth, with the resultant closing of the air passages of the throat. Intermittent sobs usually continue even after rage has subsided.

To determine what vowel sounds appear in the crying of the newborn, Irwin and Curry (1941) studied the crying of 40 infants. Front vowels, or vowels produced by the front mouth parts, were found to be almost exclusively used. Older children and adults, by contrast, use all mouth parts. No sex or age differences within the first ten days of life were noted.

Stimulation of Cries. The stimuli which arouse the infant's cries come from the immediate environment or from the physiological condition of the infant. (Contrast with this the reasons why an older child

TABLE VII. NUMBER OF CRYING SPELLS FOR EACH CAUSE

Babies	Days	Causes of crying				
		A Hunger	*B* Vomiting	*C* Soiled diapers	*D* Wet diapers	*E* Unknown reasons
50	8	2,760.0	45.0	737.0	1,630.0	3,295.0
50	1	345.0	5.6	92.0	203.8	411.7
1	8	55.2	.9	15.7	32.5	65.9
1	1	6.9	.11	1.9	4.07	8.2

Source: ALDRICH, C. A., SUNG, C., and KNOP, C. The crying of newly born babies. II. The individual phase. *J. Pediat.*, 1945, **27**, 95. Used by permission.

or adult cries!) Conditions under which crying occurs during the infancy period are as follows: (1) hunger; (2) pain or discomfort from noxious stimuli, such as rough handling, circumcision, sores, and so on; and (3) occasionally fatigue or lack of exercise. No uniform cries for the different situations are necessarily found among different infants. The cries that occur under such circumstances differ in intensity and duration, depending partly on the vocal strength of the infant and partly on the internal or external stimuli which aroused them.

Starting with the assumption that the crying of the newborn is a reflex protective mechanism, Aldrich *et al.* (1945, 1945*a*, 1945*b*) made continuous observations of the crying of newborn infants. Investigations of the causes of their crying yielded findings which are presented in Table VII.

From the above data it is apparent that babies cry more often for unknown reasons than for any other cause. When the total number of

minutes of crying was calculated, Aldrich *et al.* found that hunger cries occupied 35.5 per cent of the crying time and that crying for unknown reasons occupied 35.1 per cent. The hunger cries were of longer duration than the cries for unknown reasons, though the latter occurred more often. Wet diapers proved to be the third most common cause of crying and vomiting the least common.

Aldrich *et al.* concluded their study with the comment, "The most clear-cut result of our study of the causes of neonatal crying in the individual baby is a demonstration of the importance of unknown reasons."

Bodily Accompaniments of Crying. The crying of an infant rarely occurs without bodily activity of some sort, and this generally begins when crying begins. In the case of vigorous crying, every part of the body is thrown into action. The infant squirms; kicks; flexes and extends his arms, legs, fingers, and toes; rolls his body and turns his head from side to side. The kicking is usually fairly rhythmic but varies somewhat according to the conditions which aroused the crying. In anger, for example, the kicking is more vigorous and abrupt than during other emotional states, and the feet are generally thrust out simultaneously instead of alternately. Irwin (1930) looks upon the mass activity of the infant's body which accompanies crying as furnishing the earliest beginnings of social behavior. In the case of pain, hunger, or colic, this body activity may become a signal that the infant needs attention, and it then serves as a form of language.

Amount of Crying. How much the newborn cries is an individual matter. Among the newborn babies observed by Aldrich *et al.* (1945*b*), the baby with the least crying activity cried 386 minutes during the first 8 days of life, or 48.2 minutes per day. This compared with a total of 1,947 minutes for the baby who cried the most, an average of 243 minutes per day. For the group, the average crying amounted to 936 minutes during the 8 days, or 117 minutes per day.

In Fig. 20 is given a frequency distribution of the different causes of crying spells of an average baby on an average day.

When changes were made to individualize the nursing care of newborn infants, Aldrich *et al.* (1946) reported that the crying was reduced 51.4 per cent. Hunger led the list of causes, with unknown reasons close behind.

Social Influences. In an effort to determine the social influence of crying on groups of infants, Blanton (1917) reports an experiment in which graphophone records of the crying of one infant were played for six infants ranging in age from one to fourteen days. This was done during a number of hunger periods. The crying seemed to have no effects whatever on these infants. Two infants were then put on a couch together, to see whether the vibrations aroused by the crying of one would

bring about crying in the other. When one cried, the other remained quiet, even though awake. There was thus no evidence of social influence at work between the infants themselves.

According to Aldrich, Sung, and Knop (1945), crying among the newborn is in the nature of a reflex act and is a response to definite stimuli. It is not, therefore, a contagious phenomenon. They found no evidence

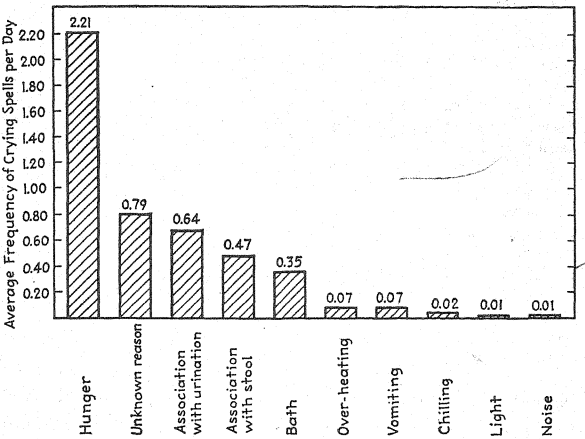

FIG. 20. Frequency distribution of the different causes of crying spells of an average baby on an average day. (*From C. A. Aldrich, C. Sung, and C. Knop, The crying of newly born babies. III. The early home period. J. Pediat.*, 1945, **27**, p. 432. *Used by permission.*)

to show that community living, as such, increased the crying of the infants.

Explosive Sounds. In addition to crying, the infant is capable of another type of vocalization, *explosive sounds*, which are not unlike heavy breathing. These are very commonly referred to as "coos," "grunts," and "gurgles." They are uttered without intent and without meaning and occur purely by chance whenever there is a contraction of the vocal muscles. Since these sounds are low in pitch and weak, compared with cries, they are often overlooked entirely or are regarded as unimportant.

From the long-term point of view, explosive sounds are far more important than cries, which are used less and less as the child grows older. The explosive sounds, on the other hand, are gradually strength-

ened and develop, during the second half of the first year, into babbling, which in turn develops into speech. When one realizes that the explosive sounds are in reality the fundamentals of speech, their true significance at once becomes apparent.

Other Sounds. In addition to cries and explosive sounds, the newborn infant is capable of making other sounds. *Sneezing* is a reflex type of explosive sound which occurs within the first few hours after birth and occasionally before the birth cry itself. As a rule, the healthy infant sneezes several times a day, and thus cleans his nose of any foreign matter. *Yawning* is likewise a type of explosive sound. It may be heard as early as 5 minutes after birth.

Whining, Irwin and Chen (1941) contend, occurs during irregular breathing. The mouth is partially opened; the tongue tip is not elevated; the muscles of the face are only slightly contracted; the lids are open or, if closed, are not tightly contracted; and the sounds are feeble. Whining, they maintain, may be reliably discriminated from crying.

Hiccuping is another explosive sound of the reflex type. This may be observed from the seventh day, and occasionally it occurs before then. The hiccups of 17 newborn infants, Wagner (1938*a*) reported, ranged in length from 35 seconds to 18 minutes 20 seconds, with a mean of 6 minutes 34 seconds. There was no relationship between the age of the infant and the length of the hiccup period, the number of hiccups in the period, or the mean interval between hiccups.

The onset of the hiccup period, Wagner stressed, was always sudden with a less abrupt termination. The intervals between inspirations gradually lengthened, in an irregular fashion, until the hiccups had disappeared. Hiccups were found to vary from barely audible inspirations to loud, sharp sounds. The loud sounds, however, never accompanied all the hiccups in one period. Usually groups of them were interspersed with groups of relatively quiet inspirations. Single, isolated hiccups rarely occurred.

EMOTIONS OF THE NEWBORN

Watson's Findings. Experimental investigations of the emotions of the newborn have been limited in number, but extensive in scope. Watson (1925, 1925*a*), experimenting with newborn infants at the Phipps Clinic of Johns Hopkins University, made the pioneer study in this field. According to him, at birth or shortly afterward only three distinct emotional reactions occur, and these may be aroused by only a very few specific stimuli. To these emotions he has given the names "fear," "rage," and "love."

The *fear*-reaction pattern may be produced by loud noises from the

moment of birth and appears in the form of a jump, a start, a respiratory pause followed by more rapid breathing, sudden closing of the eyes, clutching of the hands, and puckering of lips. The only other stimulus capable of arousing the fear reaction in the newborn, Watson contended, is loss of support, especially when the body is not set to compensate for it. This is best observed in the newborn if, just when the infant is falling asleep, he is dropped or if the blanket on which he lies is suddenly jerked.

Rage, in response to the hampering of bodily movements, can be observed from the moment of birth, though it is more pronounced and more easily observable in babies from ten to fifteen days of age. The response of the infant to the holding of his head, leg, or arms is the stiffening of his whole body, the free slashing movements of his hands, arms, and legs, and the holding of his breath. No cry is heard at first, but the mouth is opened to its full extent and the breath held until the face becomes blue. This is often followed by crying.

Love has been studied less extensively than the other two emotions because of the prejudice against experimentation in relation to the sex life of the child. From incidental observation, rather than from direct experimentation, Watson has come to the conclusion that the stimuli which call forth the love response are the stroking of the skin, tickling, gentle rocking, and patting. These responses are easily aroused by stimulating the erogenous, or sex, zones, such as the nipples, lips, and sex organs proper. The response to such stimulation is usually smiling, gurgling, cooing, and waving of the arms and legs, all of which denote a happy or good-natured emotional state on the part of the infant.

Watson's analysis of the three emotional states, present in the newborn, was accepted uncritically by child psychologists at first. Gradually, however, repetitions of Watson's experiments on newborn infants did not substantiate completely Watson's findings. The result has been that today it is questioned whether or not the newborn experiences such definite and clear-cut emotional states as Watson described.

Some of the most carefully carried out of the experimental studies, aimed to substantiate or disprove the contention of Watson that there are three emotions, fear, rage, and love, which can be aroused in the newborn by only a few specific stimuli, will be summarized below to show what knowledge we have to date of the emotional states of the newborn. Further experimental evidence may bring a decided change in the present knowledge of infant emotions.

The Shermans' Critical Findings. Sherman and Sherman (1929) carried out an experiment with infants ranging in age from 112 to 160 hours to discover whether, in the absence of knowledge of the stimulus given, medical students and student nurses could determine accurately

the emotional state of the infant. The stimulus was applied to the infant, and immediately the screen which hid the infant from view was removed. The observers were asked to watch the infant's behavior with special emphasis on the movements of the arms, legs, and body, the type and duration of the cry, the facial expression, and changes in breathing. The judgments made were as shown in Table VIII.

The above data have led the experimenters to conclude that "there is thus no agreement between observers in estimating emotional reac-

TABLE VIII. JUDGMENTS IN THE NURSERY BY MEDICAL STUDENTS AND NURSES OF THE EMOTIONAL RESPONSES OF INFANTS WHEN THE STIMULI WERE NOT SEEN

Judgments	Stimulus			Total
	Dropping	Restraint	Needle prick	
Colic	13	9	4	26
Fear	4	17	3	24
Anger	8	4	10	22
Hunger	8	4	4	16
Pain	4	2	10	16
Awakened from sleep	11	2	1	14
Organic brain emotion	1	7	3	11
Tight bandage	1	3	2	6
Uncomfortable	2	0	1	3
Total	52	48	38	138

Source: SHERMAN, M., and SHERMAN, I. C. *The process of human behavior.* New York: Norton, 1929, p. 137. Used by permission.

tions to stimuli which presumably arouse a given response, even when they see and hear the infant's responses, which show that these reactions are not generally expected."

When an attempt was made to judge the emotional state of the infant from the cry alone, the results showed as great lack of agreement as when the behavior was observed. The judgments made in connection with this part of the experiment are shown in Table IX.

In conclusion, the authors state that "most persons judge the emotional behavior of an individual in terms of the stimuli which have produced the reaction."

In contradiction to the conclusions which Watson has drawn in connection with rage and the stimuli that arouse it, Sherman and Sherman state that they have evidence that "any form of *sudden* stimulation, such as dropping, loud noises, restraint, pain, or a rush of air on the face, produces in the young infant aimless activity of most of the musculature, accompanied by crying. The stimuli must be sufficiently strong,

however, to produce the reaction—the younger the infant, the stronger must be the stimulus. This is also true for so-called pleasurable stimuli, such as stroking or petting, to which many newborn infants show no overt reaction."

Differences in emotional response, the Shermans believe, are dependent upon the quantitive aspects of the stimulus. When the intensity and duration of the stimulus are varied, the resulting reactions differ noticeably. The emotional responses of infants below twelve days of age

TABLE IX. JUDGMENTS OF THE EMOTIONAL CHARACTER OF THE CRYING OF INFANTS

Judgments	Stimulus				
	Hunger	Dropping	Restraint	Needle prick	Total
Colic	4	7	3	2	16
Hunger	6	2	2	5	15
Pain	0	3	5	5	13
Anger	2	6	2	1	11
Fear	3	1	4	0	8
Awakened from sleep	1	0	3	4	8
Irritation	0	0	3	1	4
Sleepiness	2	2	0	0	4
Discomfort	0	1	0	1	2
Grief	1	0	1	0	2

Source: SHERMAN, M., and SHERMAN, I. C. *The process of human behavior.* New York: Norton, 1929, p. 139. Used by permission.

"possess no inherent characteristics which can be noted or adequately and precisely described."

Other Findings. Using "rage" stimuli (arm restraint and nose restraint) and "fear" stimuli (drop and loud noise), similar to those described by Watson, Taylor (1934) studied 40 infants ranging in age from one to twelve days. He found no constant pattern responses in the infants studied when different stimuli were applied. Any one of the four stimuli used produced all the responses found when the other stimuli were used. The responses evoked were so general in form that Taylor was led to conclude that "the infant's behavior is best characterized as generalized activity."

Pratt (1934*a*) contends that infants show increased activity in immediate response to auditory stimuli, and that it is therefore unwise to look upon this response as an emotional state of fear, since there is no "stirred-up state of the organism" accompanying it and since increased activity is of shorter duration than is characteristically found in fear. The infant's fear, he maintains, seems more like startle than real fear and, for

that reason, should not be classed as "fear." Irwin (1930) has reported that when external conditions were kept constant, no fear reactions were observed during the first ten days of life. Fear responses are not typically elicited by loud noise or dropping, and the behavior that occurs is generalized "mass" activity.

Rage, Pratt, Nelson, and Sun (1930) found, is more like general crying and unrest, characteristic of hunger and other states of discomfort, than like real anger. To verify Watson's analysis of the stimuli which arouse the "rage" emotion, Pratt (1932) held the nose and arms of 67 newborn infants. Reactions occurred in 96 per cent of the cases. The typical reactions were drawing back the head, arching the back, general restlessness, and nonspecific body movements. Pratt concluded that "we cannot substantiate Watson's contention that defense reactions are the typical reactions to this form of stimulation." When the arms were held firmly against the infant's body, Pratt found that in 58 per cent of the cases the infants remained passive; in 26 per cent there was a brief period of activity, which gave way to inactivity; in 13 per cent the arms flexed, and there were other signs of activity; while in 3 per cent of the cases, a brief period of quiet was followed by activity. The results thus agree with those of the Shermans that no definite "rage" reactions were found, even though a large number of cases were tested.

Dennis (1940*a*) maintains that the classic rage reaction, better classified as restlessness and crying, can be elicited in the newborn by any intense and enduring stimulation. Restraint of movement, when accomplished without intense stimulation, such as infant binding, need not lead to the negative response. At a later age, any interference with a customary sequence of behavior or frustration of an ongoing activity brings out the negative reaction.

Whether or not restraint of movement will be of a thwarting nature depends upon the immediate state of the organism and upon learning. Dennis concluded that "reaction to frustration is not congenital or instinctive but it is autogenous (learned behavior not socially transmitted)."

Watson's theory of the emotions of the newborn holds that crying is an integral part of the fear pattern. Irwin (1932*c*) has investigated body startle in criticism of Watson's theory of fear as it appears in the newborn. Twelve infants were tested in a Pratt Experimental Cabinet, in which sounds were produced by a loud-speaker placed four inches from the crown of the infant's head. The body jerk was then recorded by means of a stabilimeter. The latent time of body startle was found to vary from 0.07 second, with a mean at 0.18, which is comparable to the simple auditory reaction time of adults. Crying never accompanied the body startle to loud noises, though eyelid responses occurred even when no other overt response was observable.

To test Watson's contention that loss of support is the only stimulus, other than loud noises, capable of arousing fear responses, Irwin (1932) dropped infants two feet while in a supine position. In 88 per cent of the trials, some movement occurred. Of these movements, 46 per cent were confined to the arms alone, while the extensorflexor pattern of the arm and leg movements occurred in 53 per cent of the trials. In only 3 per cent of the cases did crying occur.

Motion pictures of the responses of newborn infants to revolver shots convinced Hunt, Clark, and Hunt (1936) that there were no responses like those described by Watson. In very young infants, the response was more like the Moro reflex but it was accompanied by crying. At four months of age, however, Hunt, Clark, and Hunt (1936) found that the Moro reflex disappeared and a startle pattern, like that of adults, appeared. Hunt and Clark (1937) have suggested that the startle pattern is an unlearned reaction from which all other emotional responses develop as a result of maturation and conditioning.

According to Bakwin (1947), the newborn is equipped with a well-developed set of emotional responses. Even among infants born several months prematurely, emotional reactivity is present. These responses he divided into two groups, the "pleasant" or positive responses and the "unpleasant" or negative responses. Pleasurable responses are elicited by patting, rocking, warmth, snug holding, and allowing the baby to suck. Unpleasant responses, on the other hand, are elicited by changing the infant's position abruptly, by sudden loud noises, by hampering the infant's movements in an uncomfortable position, by a cold object applied to the skin, and by a wet diaper. To disagreeable stimuli the infant responds by crying.

One Characteristic. The outstanding characteristic of the infant's emotional make-up is the "wholeheartedness" or complete absence of gradations of response to stimuli of different degrees of intensity. Regardless of the stimulus, the resultant emotion is intense in character and sudden in appearance. As the emotional life develops, through the childhood years, this "all-or-none" condition gradually gives way to a controlled system of well-graded and controlled emotional states.

SENSITIVITIES OF THE NEWBORN

It is difficult to determine what sensations the infant is capable of experiencing at birth. Inasmuch as sensation is best studied by the introspective method, a method that cannot be used in the prespeech level of development, it is impossible to determine accurately what the sensations of the newborn are, and how they compare with the sensory experiences of older children and adults. In experimental studies of the newborn, the criterion generally used to determine the presence or absence

of a given sensory capacity is some motor response to the sensory stimulus which normally would arise from the sense organ stimulated.

Methods of Study. Throughout the discussion of sensitivities of the newborn, references will be made to the techniques used by the different investigators. In some instances, the methods have lacked scientific accuracy, primarily because of lack of control over the conditions of the experiment. Recently, however, many of the experiments designed to measure the sensitivities of the newborn infant have used the technique employed by Pratt, Nelson, and Sun (1930) at The Ohio State University. In some instances, slight modifications have been made in the technique but, for the most part, the methodology has been accepted unchanged.

A brief example of the carefully controlled conditions of Pratt, Nelson, and Sun's experimental technique will be in order. In a study of olfaction, they used a puff of air as the control stimulus, with vaporized odors of valerian, acetic acid, oil of clover, and ammonia as the olfactory stimuli. Any movements made when the control, or olfactory, stimuli were used were recorded by movements of the stabilimeter or platform on which the infant was placed during the experiment. The stabilimeter was in the experimental cabinet, described earlier in the chapter (Fig. 16), and adjusted so that any movements of the infant's body were recorded on a roll of paper. It was thus possible for Pratt, Nelson, and Sun to compare the activity of the infant before and after the olfactory stimulus was presented.

At times, it has been found impossible to distinguish between responses to sensory stimuli and responses which are not characteristic of the sense organ stimulated but which may occur as spontaneous activity. In infants, the absence of motor response may be due to the weakness of the stimulus used rather than to lack of sensory experience. In spite of this fact, the psychologist hesitates to use stronger stimuli for fear that some injury may result in the delicate sense organs of the infant. For that reason, there is no positive evidence that lack of motor reaction is indicative of lack of sensory experience.

Condition of Sense Organs. There are evidences that at birth or shortly afterward the sense organs are ready to function. While the reactions of the infant to sensory stimuli are not necessarily similar to those of an adult, nevertheless a selective reaction is made. Some of the sense organs are more highly developed than others, and the resultant sensations are consequently stronger and more nearly like those of adults. Of all the sensitivities, reactions to the stimuli of touch upon the skin are found to be the most numerous. Peterson and Rainey (1910) studied the reactions of premature infants to different sensory stimuli and found that even in cases in which birth occurred during the seventh

lunar month the infants reacted in a manner similar to that of infants born at full term. Peiper (1924) reported that in the case of three premature infants studied by him, they were no less sensitive to sound, light, pain, and cold stimuli than infants born at full term.

The following types of sensitivity have been investigated in the newborn:

1. *Sight.* At birth, the retina has not reached its mature development. It is thinner than in the adult eye, and the cones in the fovea are short and ill-defined. The area of the retina is smaller than in the adult eye, but the number of cones per unit area is the same. At thirty hours of age or shortly afterward, the pupillary reflex is well established. Before that, there is only a sluggish response to light. The protective responses of turning the head, closing the eyelids, and crying appear shortly after birth. Optic nystagmus, the ability to follow moving objects and then move the eyes backward in the opposite direction, comes several hours after birth. Ocular pursuits of a moving object is poor unless the object moves slowly. Horizontal, vertical, and circular pursuit with both eyes develops markedly during the first ten days of life (Beasley, 1933).

In the studies made by Peterson and Rainey vision was measured by (1) response through signs of discomfort and (2) starting at lights, objects, and persons. They found that, during the first week of life, 839 out of 944 infants studied responded to light by signs of discomfort, while in the second week, 75 out of the remaining 105 did so. When the response to light, object, or person was used as a measure of visual sensitivity, they discovered that of the 144 cases studied, 59 responded in the first week, 73 in the second, 10 in the third, and 2 in the fourth.

The question of whether or not the infant sees color has not yet been experimentally determined. Studies of the development of cones in the eye of the newborn have given no clue as to sensitivity to color. Any attempt to determine color sensitivity at birth must be based on the manner of functioning of the eye and not on its anatomical condition. As early as 1881, Preyer (1888) reported that at birth the infant can perceive only the difference between light and darkness, while colors cannot be distinguished correctly until the age of three or four years. Canestrini (1913) maintained that particular responses to particular colors were not made by the newborn. Colored lights produced results similar to those of white light.

Smith (1936), on the other hand, reports that infants seven to nine days old appeared to respond in a slightly dissimilar way to different colors of the same physical energy. Blue had the most marked effect in inhibiting activity; green was less effective, and red had the least effect

of all. Girls were affected more by colors than were the boys studied, who appeared to be partially color blind and incapable of seeing red.

2. *Hearing.* There seems to be no agreement among scientists as to whether or not infants respond to sound stimuli by auditory sensations immediately after birth. Some report that reactions occur within 10 minutes after birth, while others report that deafness exists during the first few days of life. At birth, hearing seems to be at the lowest stage of development of all the sensitivities. Many infants are totally deaf for several hours or days after birth, owing primarily to the stoppage of the middle ear with amniotic fluid. Very often, loud noises near the ear of the newborn produce little or no reaction. There are, however, individual differences in infants in their sensitivity to sound stimuli.

Testing auditory sensitivity by means of a rattle, low voice, lip sounds, tearing of paper, and falling of a hammer head revealed that in two-thirds of the infants tested by Peterson and Rainey (1910) squirming or some similar response was made during the first week of life. When hearing was delayed beyond this date, they maintained that in the majority of cases it was due to fluid in the ears which had not drained completely after birth.

Using such stimuli as tuning forks, electric bells, wooden bells, cans, and snappers, Pratt, Nelson, and Sun (1930) found that in 46 per cent of the cases definite movements were made. A larger percentage of responses was made to the can, snapper, and electric bell than to the tuning fork and wooden bell. Aldrich (1928) tested hearing by establishing a conditioned reflex with a pain stimulus applied to the foot and the ringing of a bell. After 12 or 15 applications, the infant drew up the leg when the bell was rung and the foot was not touched.

Testing the hearing of the newborn with a small hand bell with a pitch of approximately 512 vibrations per second, Bryan (1930) found that during the first week of life not all infants tested gave evidence of being able to hear these sounds. The average newborn gives no evidence of hearing ordinary sounds during the first two days of life, though most newborn infants make some response to stimuli of this sort from the third to the seventh day. Reactions to noise, such as the rattling of paper or the striking of a porcelain plate with a spoon, are more positive than to the voice, even when a loud conversation is being heard. It is not until the fourth week that the reaction to the voice is more frequent than to loud noises (Hetzer and Tudor-Hart, 1927).

3. *Taste.* Studies of the sensitivity to taste stimuli on the part of infants have revealed that the newborn infant has a more highly developed sense of taste than of sight or hearing. Peterson and Rainey (1910) found that about 800 of the 1,000 newborn infants studied by them gave

distinctive reactions to taste stimuli during the first week of life and the remaining number of the second week. The reactions of the infants to sweet and salt stimuli were primarily positive, evidenced by contented sucking, while the reactions to sour and bitter were largely negative, in the form of discomfort reactions. The reactions shown in Table X were obtained from infants during the first week of life.

In Pratt, Nelson, and Sun's (1930) experiment on infants given stimulations of sugar, salt, quinine, water, and citric acid at room temperature, there were reactions, at the age of one day, to 86 per cent of the stimulations and, at the age of eleven days and older, to 81 per cent. The reactions which occurred were sucking, movements of the extremities, general body movements, head movements, facial movements, and eye movements. Twenty-five per cent of the reactions were to citric acid, 24 per cent to quinine, 19 per cent to sugar, 17 per cent to salt, and 15 per cent to water.

TABLE X. SENSORY REACTIONS OF INFANTS

Response	Sweet	Salt	Bitter	Sour
Contented sucking.....	747	503	31	136
Discomfort reaction.....	37	295	780	659

Source: PETERSON, F., and RAINEY, L. H. Beginnings of mind in the newborn. New York, *Bulletin of the Lying-in Hospital of the City of New York*, 1910. Used by permission.

Shirley (1931*a*) found reactions to sour, bitter, and salty stimuli to be primarily those of rejection, shown by a turning of the head from side to side, screwing up of the face, crying, or slashing the arms. Positive reactions of sucking, on the other hand, occurred when sweet stimuli were used. In general, then, it may be said that the studies made to date show that the responses the infant makes to sweet stimuli are positive while those to salt, sour, and bitter stimuli are negative. There are, however, wide individual differences in taste thresholds (Dockeray, 1934).

4. *Smell.* Using such stimuli as asafetida, oleum dippelii, acetic acid, ammonia fumes, petroleum, compound spirits of orange oil and geranium, and mother's milk, experiments by Preyer (1888), Peterson and Rainey (1910), and Pratt, Nelson, and Sun (1930) have shown that the sense of smell is well developed in the newborn. This high sensitivity is shown in such reactions as squirming, crying, grimaces, and sucking movements and may be observed within the first hour after birth. Reactions to olfactory stimuli are made when the infant is asleep as well as when awake, and refusal to take the breast occurs whenever the breast has been rubbed with such an odor as petroleum (Preyer). Ammonia

and acetic acid prove to be the most effective stimuli in arousing definite responses in infants, though they respond to weaker stimuli such as valerian and cloves, indicating an ability to smell them also. Wide individual differences, however, occur in infants, as well as in the same infant from one day to another (Disher, 1934).

5. *Skin Sensitivities.* The skin sensations of touch, pressure, temperature, and pain are present at birth or shortly afterward. Sensations of touch are present at birth in all parts of the body. This may be seen whenever the stroking reflex occurs. Some parts of the body, however, are more sensitive than others. The mucous membrane of the lips, for example, is hypersensitive, while the skin of trunk, thighs, and forearm is hyposensitive. Blanton (1917) reports that on six occasions she had observed marked shivering within 15 minutes after birth, on two of which occasions it persisted until the infant was put near a hot-water bottle.

Cold stimuli produce prompter and more pronounced reactions than heat stimuli (Canestrini, 1913). Responses to stimuli ranging from 16 to 45°C. occur in infants as young as forty-one hours old. Reactions to temperature stimuli ranging from 8 to 53°C. have been found by Pratt (1930) to take the form of sucking, movements of the extremities, face, mouth, eyes, and general bodily movements. Less intense reactions occur to temperatures warmer than the body temperature than to those colder than the body temperature. More reactions to cold stimuli consisting of chilled metal cylinders placed on the forehead and inside surface of the knee occur when the infant is asleep than when awake (Pratt, Nelson, and Sun, 1930).

Sensitivity to temperature stimuli is likewise displayed by the infant's refusal of milk of the wrong temperature or crying in response to water that is too cold or too hot. Jensen (1932) noted differential sucking reactions to changes in the temperature of milk. Large individual differences existed, but the threshold for the same infants remained constant over the period when he tested them.

Sensitivity to pain is weak during the first day or two of life. The places of highest sensitivity are the soles of the feet, the lips, eyelashes, mucous membrane of the nose, and skin of the forehead. The body, legs, underarms, and hands are hyposensitive as compared with the adult. Pain responses not only appear earlier in the anterior end of the body but they also develop more rapidly than those in the posterior end. This is seen by the fact that the infant's face is more sensitive to painful stimuli than the legs, and this holds true for the first four days of life.

Circumcisions performed under two weeks of age without the use of an anesthetic causes no pronounced suffering; and lumbar punctures performed without anesthetic produce only a momentary pain reaction. In an adult, both would be very painful. A study by Sherman and Sherman (1925) showed that simple needle pricks, applied to the cheeks, thighs, and calves of the legs of the newborn, resulted in no reactions before the age of six hours. At five hours, the infant responded when the cheek was pricked 10 times in immediate succession, but no response was made to repeated stimulation of the leg. When the infant was forty-one hours old, there was a response to a single prick on the face, and after seventy-six hours, to a single prick of the leg. Reactivity to pain increases with age (Sherman, Sherman, and Flory, 1936).

How the newborn infant responds to a pinprick has been investigated by McGraw (1941*a*). Stimulations in four different areas—the head, trunk, upper and lower extremities—were made on 75 infants. Ten pinpricks were applied to each area. McGraw found that some infants only a few hours or days old may exhibit no overt response to the prick. It is thus impossible to know whether the absence of response is due to an undeveloped sensory mechanism or to lack of connections between sensory and somatic centers or between receptor centers and those mechanisms which govern crying.

These infants, McGraw noted, usually responded to deep pressure stimulation. By the end of the first week or 10 days, most of the infants studied reacted to cutaneous irritation by diffuse bodily movements, accompanied by crying and sometimes by a local reflex withdrawal of the stimulated member. The area supplied by the trigeminal nerve proved to be the most sensitive. Sleep in newborn infants, Crudden (1937) found, increases the threshold of sensitivity. He found more nonlocalized and diffuse than localized responses during sleep.

6. *Organic Sensitivities.* It is difficult to tell specifically whether the organic sensations of hunger and thirst are developed at birth. Crying may indicate only general discomfort, or it may be the result of specific discomfort arising from hunger and thirst. Hunger contractions appear to be fully developed at birth. They differ from those of an adult only in that they occur at more frequent intervals. Studies of newborn infants by Carlson and Ginsburg (1915), in which the subjects swallowed rubber balls attached to a catheter, showed that hunger contractions appeared even before the stomach contained food. The hunger contractions appeared very soon after birth. Hunger periods occurred every 10 to 15 minutes and ended in a complete tetanus, or rigid contracting of the muscles.

CONDITIONING IN THE NEWBORN

The ability to learn on the part of the newborn has been denied by the Pavlovian school of Russian physiologists and psychologists, on the grounds that the formation of conditioned responses is impossible because, during the first few months after birth, the cerebral cortex functions very incompletely. To investigate this matter, Marquis (1931) tried to condition the feeding reactions of eight newborn infants to the sound of a buzzer. Each feeding, from the first time they were fed, was either immediately preceded or accompanied by a buzzer. After 3 to 6 days of experimentation, seven of the eight infants began to show significant changes in their reaction after the buzzer was sounded. Sucking and mouth opening increased, while general activity and crying decreased. The former two reactions are directly related to food taking, while the latter two are not. In the one infant in whom a conditioned feeding response was not made, the physiological condition was poor.

In a later experiment, Marquis (1941) observed signs of behavioral adaptation in the feeding schedule of newborn infants. One group of infants was on a 4-hour feeding schedule, one on a 3-hour schedule, and one on a "self-schedule," determined by the infant's crying. To test adaptation, the 3-hour group was transferred to a 4-hour schedule and their behavior compared with that of the group that had been on a 4-hour schedule from the beginning.

The "self-schedule" group was used as an indication of what the natural feeding rhythm of newborn infants might be. The 3-hour group, when changed to a 4-hour schedule, showed a pattern of activity decidedly different from that shown by the 4-hour group. The 4-hour group showed an increase in activity toward the end of the fourth hour, while the 3-hour group showed an abrupt rise in activity at the end of 3 hours. This continued until feeding time. The results are shown graphically in Fig. 21.

Marquis concluded from this that the 3-hour group had adapted to the 3-hour schedule and showed signs of upset when a change of schedule was introduced. This, in turn, showed that learning had taken place. Frustration in the feeding situation, Marquis (1943) later reported, occurs when infants have become adapted to a schedule. The strength of the reaction varies with the strength of instigation of the hunger drive.

Wenger (1936) applied the conditioning technique to three different situations. In the first situation, a flashlight strong enough to produce closing of the eyelids was used while at the same time a vibrator was placed on the infant's body. In the second series of the experiment, an auditory stimulus was associated with a mild electric shock, and, in the

third, Marquis's technique, described above, was duplicated. The results of the three series led Wenger to conclude that the conditioned response is difficult to elicit during the first ten days of life, and, when it does appear, it is unstable. Conditioning of the feeding response was found to be especially poor, and satisfactory results could not be obtained even after eight weeks of training. Wickens and Wickens (1940), as a result of their studies, question whether conditioning takes place in the newborn. In their experimental group the infants received paired

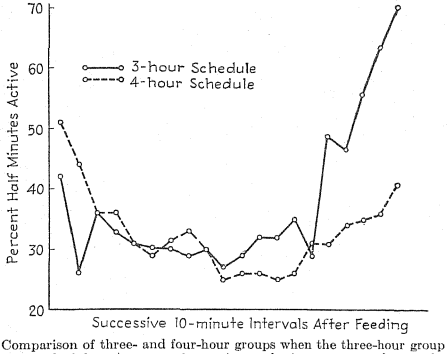

FIG. 21. Comparison of three- and four-hour groups when the three-hour group changed to a four-hour schedule. Average of morning and afternoon periods for all subjects. (*From D. P. Marquis, Learning in the neonate: the modification of behavior under three feeding schedules. J. exper. Psychol.*, 1941, 29, p. 273. *Used by permission.*)

stimulation of a buzzer and a shock to the sole of the foot while, in the control group, the shock alone was used. Both groups, at the end of the third day of the experiment, showed clear-cut responses to the buzzer alone, even though the control group had never had the paired stimulation of buzzer and shock.

Kasatkin and Levikova (1935) report that conditioned alimentary reflexes, as indicated by sucking movements, in response to auditory stimuli, do not appear until the first half of the second month of life. In this conditioning, the main role is played by the child's maturity, not by the number of stimulations.

Whether it will be possible to condition the emotions of the newborn, as can be done easily and quickly during the first year of babyhood, has not yet been investigated. Likewise, since the infant's food is limited in variety, the problem of conditioned taste likes and dislikes is not

important and, as a result, has not been investigated. The infant's complete unawareness of the individuals present in his environment does not offer an opportunity for the study of conditioned social likes and dislikes. Therefore, what learning there is through the conditioning technique is apt to take place in connection with feeding and emotions alone.

CONSCIOUSNESS OF THE NEWBORN

How does the world appear to the newborn, and of what is he conscious as he first observes the environment into which he is born? For years, interest of a speculative sort has been concentrated on this problem; but, because of its highly subjective nature, it is impossible to do more

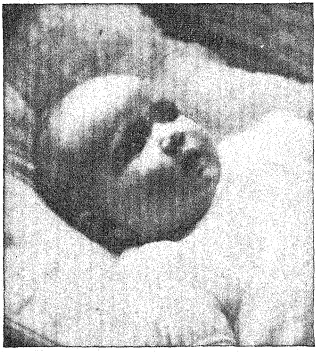

FIG. 22. To the newborn, the world is "one great blooming, buzzing confusion." (*Courtesy of Maternity Center Association.*)

than guess from the infant's behavior as to what goes on in his mind and what he perceives during the first days after birth. The limited information we have comes from our knowledge of the conditions of the sense organs at birth and from observations of the infant's behavior in different situations.

Many attempts have been made to describe infant consciousness. One of the earliest of these is the oft-quoted statement of James (1890) that the "baby, assailed by eyes, ears, nose, skin, and entrails all at once, feels it all as one great, blooming, buzzing confusion" (488). And, in his analysis of sensations, he says that "prior to all impressions of the sense organs, the brain is plunged in deep sleep and consciousness is

practically non-existent. Even the first few weeks after birth are passed in almost unbroken sleep by human infants. It takes a strong message from the sense organs to break this slumber" (pp. 7 to 8).

Stern (1930), while stating that the newborn infant is mainly a "creature of reflexes," nevertheless grants that the first traces of consciousness may be present at birth. According to him, "all that we are possibly justified in assuming is the presence of a dull, undefined foreshadowing of consciousness in which the sensorial and emotional elements are so inextricably intermingled that they may be designated either as 'sense-emotional states' or 'emotional-perceptive states.' The presence of feelings, of comfort, or discomfort is evinced from the very first day by the bodily habit as a whole, by the expression of the face, and by the active expression of screaming." Koffka (1925) believes that the "newborn infant experiences the world differently from us adults, just as an unmusical person hears a symphony differently from one who is musical."

BEGINNINGS OF PERSONALITY

Differences in personality are apparent during the first few days of life, just as differences in appearance are. Some infants are "good as gold," while others are fussy and troublesome. These differences may be due partly to age (premature as compared with full-term infants), circumstances of delivery, or health conditions.

Shirley (1933*a*) studied the personalities of babies from data obtained in connection with periodic tests. Personality tests were found to be constant enough over a period of time to justify the assumption that a "nucleus of personality exists at birth and that this nucleus persists and grows and determines to a certain degree the relative importance of the various traits. Some change is doubtless wrought by environmental factors, but this change is limited by the limitations of the original personality nucleus." Irritability, for example, was found to be greater during the first fourteen days of life than it was as the baby grew older. This trait, Shirley maintains, is fairly well established from birth on.

TYPE OF BIRTH

It is popularly believed that babies born "naturally," or by spontaneous birth, have an advantage over those born instrumentally. To test this theory, Wile and Davis (1941) studied a group of 500 children, thirteen to fifteen years of age, 76 per cent of whom were born spontaneously, while the rest were assisted into the world by instrumental and other operative methods. Comparisons of the I.Q.s of the two groups led to the conclusion that "instrumental delivery has not a devastating effect upon the mentality of children who survive."

In a comparison of behavior problems among the children of the two groups, more were found among those spontaneously born than among those of instrument birth. The results are summarized in Table XI.

TABLE XI. PROBLEMS AMONG SPONTANEOUS AND INSTRUMENTAL DELIVERY CASES

Problems	Spontaneous delivery, per cent	Instrumental delivery, per cent
Aggressive types of behavior (rages, tantrums, pugnacity)	65	33.3
General hyperactivity (restlessness, irritability, distractability)	25	50
Submissive types of behavior (fears, unhappiness, fantasy life, no friends)	40	25
Tics, nailbiting, food fads	70	33.3
Peculation	12	6.7
Infantile home relationships	55	20
School difficulties	45	22.3
Intersibling conflicts	30	15
Physical ills	10	3.3

Source: WILE, I. S., and DAVIS, R. The relation of birth to behavior. *Amer. J. Orthopsychiat.*, 1941, **11**, 329. Used by permission.

In all except general hyperactivity, many more problems were found in the spontaneous than in the instrumental group. This led Wile and Davis to conclude that "behavior reactions are not to be interpreted as shocks of birth, with a persistence of fear and pain and an anxiety that later might become a source of neurotic behavior."

PREMATURE BIRTHS

Prematurity means a condition in which the newborn infant is relatively unfit for extra-uterine life because his prenatal development has not been completed. There is a lack of development or a retardation in development which has been caused by a shortening of the period of the fetus during prenatal life. The more premature the infant is, the more poorly equipped he is for extra-uterine life.

Criteria of Prematurity. There are two criteria which are generally used in determining whether or not the newborn infant is premature. The first is the *length of the gestation period.* When the gestation period is estimated to have been between 28 and 38 weeks long, the infant is considered to be premature. The second criterion of prematurity is *birth weight.* This is more commonly used than the length of the gestation period, which cannot always be estimated accurately. When the

infant at birth weighs 2,500 grams (5 pounds 8 ounces) or less, he is considered to be premature. The lighter the weight, the less chance there is for survival.

Survival is relatively rare when birth weight is 1,000 grams (2 pounds 3 ounces) or less. For those infants whose weight is above this, the chances of survival vary according to birth weight. If the infant weighs more than 1,500 grams (3 pounds 5 ounces), its chances of survival are estimated to be four times as great as if its weight were 1,500 grams or less. Separate norms must, however, be used for infants of different races and for the two sexes.

Infants prematurely born, as a rule, develop faster in their early postnatal environment than do infants who are born at full term. The premature infant, for example, at the age of nine months from the time of conception is more mature than the infant of full term who has just been born. The premature, however, is generally judged in terms of age from the time of birth and this puts him at a decided disadvantage in comparison with full-term infants.

The necessity for corrected age for the premature has been stressed by Gesell (1945), who states that "The developmental status of the premature infant must always be appraised in terms of corrected age rather than in those of his spurious chronological age. Born or unborn, the infant cleaves to the inherent sequences of behavior maturation. He remains faithful to his fetality, even when birth has made him an infant" (p. 143). If the infant's actual age is considered, Gesell (1933*a*) maintains that he suffers no appreciable retardation in his development.

Characteristics of Premature Infants. Studies of prematurely born infants have been numerous. These studies have brought out a number of characteristics of the development present at birth of the premature as compared with full-term infants. For the most part, they show the behavior repertory characteristic of the newborn, though in a less developed form.

1. *Developmental Status.* The developmental status, Benton (1940) reports, shows retardation during the first two years of life in the case of prematurely born infants. Melcher (1937) examined 42 prematurely born infants by means of the Bühler-Hetzer Infant Scale during the first eighteen months of life and found that these infants lagged behind the averages for children born at full term up to the age of five months. After that, their test scores fell within the average limit.

Using the Cattell modification of the Yale Developmental Schedule, Shirley (1938*a*) examined 63 prematurely born infants at intervals up to eighteen months of age. She found that babies whose birth weight had been under 4 pounds were retarded by a month or more through the

18-month period. Those whose birth weights were 4 to 5 pounds, on the other hand, overtook the normal group by the age of nine months.

2. *Motor Control.* Prematurely born infants have been found to be somewhat backward in motor performances as compared with full-term infants. In manual-motor control, Shirley (1939) reported, they are retarded especially in the use of the index finger for pointing and in the pincer grasp. In postural and locomotor control, their development is delayed and they are less graceful in their movements than other babies. They are awkward, clumsy, and have poor posture. They are either very active or sluggish and slow. Melcher (1937) likewise reported that tests showed prematurely born babies to be retarded in postural control.

3. *Speech.* Shirley (1939) noted that prematurely born infants persisted longer in baby talk and used more letter substitutions, such as "pray" for "play" and "tix" for "six," than did other children. In the 250 prematurely born infants that Hess, Mohr, and Bartelme (1934) compared with their siblings, it was found that speech appeared as early among them as among their siblings, but that in their speech there were more frequent instances of defects, especially stuttering.

4. *Intelligence.* In answer to the question, Does prematurity, as such, produce a marked alteration in the course of mental growth? Gesell (1928) answered emphatically "No." Benton (1940) reported that, as a group, prematurely born children are not inferior to full-term children in intellectual development. Among prematures, however, he found a somewhat higher incidence of serious mental defects than in the general population. The smallest prematures were found to contribute more than their share to the ranks of the mental defectives. By the age of three years, the slight intellectual retardation associated with premature births was, in the majority of cases Benton studied, overcome.

Among the prematurely born children studied by Hess, Mohr, and Bartelme (1934), test results showed that during the first two years of life the children showed a tendency toward retarded mental development when their scores were computed on a chronological basis; but when the scores were computed on a corrected chronological-age basis, there was no statistically reliable difference between them and their siblings. The general trend of the mental-growth curves for both the prematurely born and their full-term siblings was the same. This led to the conclusion that "mental development of prematurely born children who have siblings differs in neither rate nor amount from that of their full-term siblings." Their mental development was also comparable with that of unselected standardization groups.

5. *Sensory Acuity.* Prematurely born infants are reported to be more alert in sensory than in motor behavior. They are sensitive to sounds,

noises, colors, and moving objects. As babies, Shirley (1939) noted, prematurely born infants were more keenly aware of sounds and more interested in their meanings than the full-term child is. They are, however, easily distracted by voices, traffic noises, and other babies.

6. *Emotional Behavior.* Conflicting reports about the emotional behavior of prematurely born infants have been given. Shirley (1939) found the premature babies she studied to be more petulent, shy, erascible, and negativistic than children whose prenatal development was normal. In addition, she noted a marked aesthetic appreciation accompanied by a desire to create artistically. Melcher (1937), on the other hand, noted a rather moderate affective reaction among the prematurely born and described them as "gentle babies."

7. *Personal-social Behavior.* How prematurely born children react to people and social situations as compared with full-term infants has been investigated by a number of psychologists. In general, the reports indicate that prematurely born children are inferior in this aspect of their development. Jersild (1947) commented that, during the early years of life, premature children are more advanced in their personal-social behavior (smiling, noticing people) than in their motor development. Shirley (1939) found them to be shy and much attached to their mothers.

According to Mohr and Bartelme (1930), the personal-social behavior of prematurely born children is consistently superior. This, they explained, may be attributable to the unusual care and attention offered them, or to their additional opportunities for social experiences. Owing to their physical weakness at birth, Hess *et al.* (1934) explained, there is a tendency to overprotect the prematurely born child. This influence is reflected in certain aspects of personality. They noted in these children more dependency reactions, such as hiding the head in the mother's lap, clinging to the mother, and turning to the mother for help and approval than were noted among the full-term siblings.

8. *Nervous Traits.* Nervous traits or behavior disorders have been found to be definitely more numerous among prematurely born than among full-term children. Benton (1940) lists a variety of symptoms, such as psychosomatic difficulties (poor sleep, fatigability), emotional difficulties (irritability, shyness, emotional outbursts), and disturbances in the intellectual field (concentration and attention difficulties, forgetfulness).

Hess, Mohr, and Bartelme (1934) report that, in the groups studied, habits of thumb or finger sucking were twice as frequent among the prematurely born as among their siblings. Temper manifestations, including stamping, hitting, kicking, and screaming in fright, were also exhibited much more often. Shirley (1939) likewise reported that pre-

maturely born infants manifest more nervous mannerisms than do babies born at full term. These she reported to be shyness, dogged determination not to comply with directions, peculiar gestures with the hands, hypersensitivity to sounds, extreme erascibility, and a tendency to burst into tears at the slightest provocation.

Explanations for the greater number and variety of nervous traits among the prematurely born have, for the most part, laid the blame on environmental conditions. Jersild (1947) suggests that prematurely born children are overprotected at first, then pushed to enable them to catch up to children born at full term. This tends to make them nervous. According to Benton (1940), the greater frequency of nervous traits among the prematures is caused by hereditary factors, birth injuries, faulty nurture, and initial feeding habits.

Shirley (1939) states, "Possibly the environmental milieu of the premature is entirely responsible for their development of nervous mannerisms." When the babies are young, their mothers are anxious about them and hover over them with great solicitude. Later, they overurge the child in an attempt to close the gap between him and the child who was born at full term.

TEXT-FILM

The text-film for use with Chapter IV will be found at the end of Chapter III.

CHAPTER V

PHYSICAL GROWTH

Physical and Mental Growth. Physical growth is a topic that does not necessarily belong in a book on psychology. But, because the relationship between physical and mental growth is so marked, it is impossible to have a real understanding of the development of the child's behavior without considering the growth of body structure. Only the phases of physical growth which have a definite bearing on mental growth will be discussed.

The relationship between physical and mental growth is of two types: (1) many aspects of the child's mental development are directly dependent upon his physical development, and (2) the malfunctioning of the physical organs not only affects the child's mental development but, in many cases, it is responsible for abnormal behavior. Illustrations of these two types of relationship will bring out their real significance.

Normal Physical Development. The popular idea is that the relationship between physical and mental growth is one of compensation. Physical superiority is supposed to be accompanied by mental inferiority, the "Beautiful but dumb" type; while the brainy person is thought to be a physical weakling. There is, however, no scientific evidence to support this theory. On the other hand, there is plenty of evidence to show that the relationship is one of correlation rather than compensation. Superior children are slightly superior in physical development, as shown in Terman's (1925) study of genius, just as dull children are backward in physical development or have some physical defect.

The *emotionality* of the baby between the ages of six months and 2½ years may be traced to the cutting of teeth. Each new tooth is accompanied by some physical upset, even though it be of a minor sort, and this predisposes the baby to general irritability. Nervousness and emotionality are very pronounced at puberty and are the direct outgrowth of the physiological changes occurring at that time. How body weight affects the sitting, creeping, and walking of babies has been investigated by Weech and Campbell (1941) in the case of 33 babies. Babies who expanded rapidly in physical size, they found, developed, on the average, more slowly in behavior than did those with a slower rate of gain. The *play* of the child at all ages is dependent upon his

physical as well as his mental development. The size of his body, the strength of his muscles, and the amount of fat he has, all determine to what extent he can take part in the games and other play activities of the children of the neighborhood. *Intelligence* is directly dependent upon the size and structure of the brain.

The influence of the child's *physique* on his attitude toward the social group is very great. Because of his inferior size, the little child feels shy in the presence of adults, while in the presence of bigger children he feels inferior. The close relationship between obesity and personality has been explained by Bruch (1943) as follows: "Overeating is frequently used to combat anxiety and to satisfy aggressive impulses in children who had grown up under circumstances that had failed to give them adequate acceptance and emotional support from those persons on whom they were most closely dependent." The obese child loses out in active play and, as a result, lacks the necessary opportunities to learn social skills which are essential to social success.

Malfunctioning of Physical Organs. The malfunctioning of any physical organ interferes with normal mental development. The child suffering from marked thyroid deficiency, "cretinism," is not only physically deformed but also mentally deficient. Physical and intellectual growth have thus been stunted by the abnormal functioning of the *thyroid glands*. *Deafness, blindness,* or a *weak heart* keeps the child from entering into the play activities of other children. The result is the development of unsocial behavior and an attitude of inferiority which often colors the child's entire behavior. The attitude of other children toward the child who suffers from some physical defect is also unfavorable. He is neglected, ridiculed, or sympathized with, depending on the severity of his defect, and this affects his attitude toward himself. Blindness, Maxfield and Fjeld (1942) have pointed out, causes preschool children to be "less docile, less active, and have less initiative than seeing children of corresponding ages." Deafness, they found, makes children seem stupid. They are handicapped in all language work in school because they have great difficulties in comprehending and learning to speak a language.

Because what a child can do, say, think, or feel at a given age depends to such a large extent upon the stage of physical development he has attained, the child may rightly be said to "behave in accordance with his physical age." The stage of the child's physical development is thus more significant than his chronological age in determining his behavior.

METHODS OF STUDYING PHYSICAL DEVELOPMENT

Two methods have been used to study physical development. The first, the *longitudinal method*, consists of repeated measurements on the

same individuals year after year, to trace the growth that occurs at each age. The second, the *horizontal* or *cross-section method*, consists of measurements of large groups of individuals of different ages, to obtain a norm or standard for those ages. If the results are to be of any value, the groups studied by the horizontal method must be large enough to minimize the influence of individual variations.

At the present time, there is greater emphasis on longitudinal studies of large groups of children measured at regular intervals over a period of years than on studies of cross sections. The advantage of the longitudinal method, Shuttleworth (1937) has shown, comes from the great decrease in the experimental error of prediction resulting from the elimination of sampling errors which arise when age standards are based on cross sections of the population. He has shown that cumulative data, based on repeated measurements of 248 cases over a 12-year period, were equivalent to 270,000 cross-section measurements. The longitudinal method makes it possible to study individual differences in growth as well as in growth trends.

Krogman (1940) has listed six current trends in the study of the physical growth of the child. These are

1. Standardization of weights, dimensions, etc., for all ages.
2. Study of the hereditary transmission of physical characters.
3. Interpretation of anthropology from a biological viewpoint.
4. More emphasis on maturation and less upon dimensions.
5. Relationship between physical growth and mental progress.
6. Utilization of growth data as the basis of the assessment of well-being.

GROWTH CYCLES

Growth is rhythmic, not regular. A child does not grow a given number of pounds annually. Growth comes, on the contrary, in cycles or waves. Rapid growth is followed by a resting period, when growth slows down markedly, and then, later, rapid growth is resumed. There are four distinct periods in the growth cycle, Meredith (1935) found from measurements of 1,243 boys. There is a period of rapid growth from birth to two years, a period of slow growth from two to eleven years, a second period of rapid growth from eleven to fifteen, and a final period of slow growth between fifteen or sixteen and eighteen years.

There are marked individual differences in the cycles of growth. The growth of smaller children is characterized by longer periods of accelerated growth at slower rates than is true of large children. The period of rapid growth, on the other hand, occurs earlier in larger children.

In spite of individual differences, these growth cycles are so universal and so predictable that clothing for children is sized accordingly. The rapid growth in the first year necessitates two sets of clothing, the *infant*

size for the first six months and the *first* size for the last six months. The next larger size is adequate for the child from his first to his second birthday, while the size larger serves for two years, from the second to the fourth birthday. Sizes suited to the development of older children and adolescents likewise take into consideration the growth and the resting periods.

Growth Cycles for Different Organs. Each organ and each part of the body follows its own laws of development. The different parts of the body have their own individual periods of rapid growth, and each reaches its mature size at its own individual time. Scammon and Calkins (1929) maintain that there are four main types of growth, each with its own sequence and tempo. Because of this, study of physical development by any one index would give a very incomplete and deceptive picture of total physical growth. The four types of growth they list are these: general or skeletal, nervous, lymphoid, and genital.

How markedly the growth of the different organs differs after birth as contrasted with prenatal development is illustrated in Fig. 23, based on the studies of Scammon (1930). The transition from the uniform style of growth characteristic of prenatal life to the diverse forms found in postnatal development is not an immediate one, Scammon found; nor does it take place in all parts of the body at the same time Throughout the first year of life, the organs and structures of the body depart, one by one, from simple to complex modes of growth.

The muscles, bones, lungs, and genitals increase approximately twenty times in size during the growth years, while the eyes, the brain, and some other organs increase much less because they are relatively more developed at birth. The eyeball, for example, completes most of its growth during the first 5 years and the brain during the first 10, while the heart and some other organs require more than 20 years to reach their mature size. In general, growth of the parts of the body follows the *law of developmental direction,* referred to in Chap. II and explained in more detail in Chap. VI. This means that, for the most part, development occurs first in the upper part of the body and later in the lower part of the body. Similarly, the brain and facial features attain maturity in development before the organs and features of the lower trunk and limbs.

Growth Cycles within the Year. Growth within a calendar year comes in cycles, just as it does from one year to another. July to middle December is the season most favorable for increase in weight, with the most rapid gain from September to December. At this time, the average gain is four times that from February to June. The least growth comes from the beginning of May to early July. Growth in height, on the other hand, follows an entirely different cycle. The greatest increase comes

67%
71%

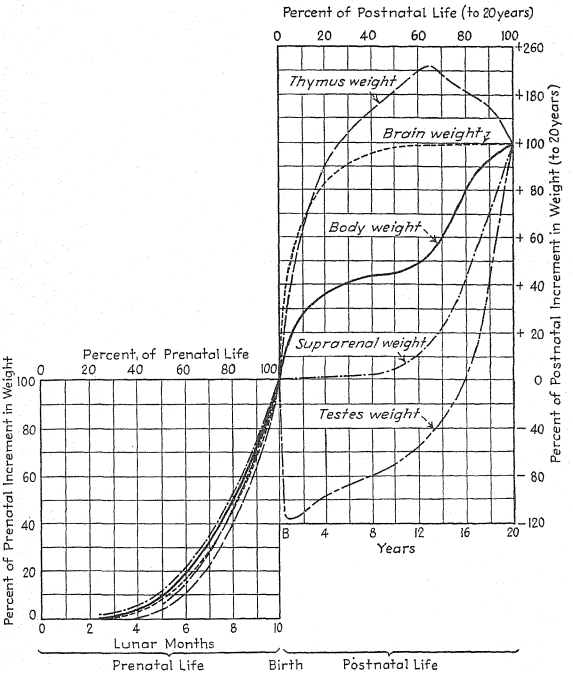

FIG. 23. Diagram illustrating the growth in prenatal and postnatal life of a series of diverse postnatal types of growth. *(From R. E. Scammon, The measurement of the body in childhood. In J. A. Harris et al, The measurement of man. University of Minnesota Press,* 1930, *p.* 204. *Used by permission.)*

from April to the middle of August, paralleling the slow period of increase in weight, while the least increase comes from August to the end of November, the period of greatest increase in weight.

Reynolds and Sontag (1944) investigated seasonal variations in weight, in height, and in the appearance of specific ossification centers in 133 children of ages one to five years. Seasonal variations similar for both

sexes were found to exist with variation in weight most pronounced; in ossification, moderate; and in height, slight.

The period from October to December was one of maximum weight gain; from April to June, of minimum gain. Maximum height gain took place from April to June; minimum gain, from October to December. The maximum rate for appearance of ossification centers occurred between March and May; the minimum rate of appearance, from September to November.

HEIGHT

The baby at birth measures 19 to 20 inches in length, on the average, though slight variations occur as the result of parentage, sex, and racial factors. The first two years of life are marked by a rapid increase in height. During the first four months, the baby normally grows from 2½ to 3½ inches, making him 22 to 23 inches tall. When he is eight months old, the average baby measures between 25 and 27 inches; when a year old, 27 to 29 inches.

During the second year, his height increases about 4 inches, which means that he should be approximately 32 inches tall at two years of age. From the third to the sixth year, growth in height occurs at a slower rate. There is an average increase of 3 inches annually, so that by the time he is six years old the child's height should have doubled since birth, making him 40 inches tall.

Up to the onset of puberty, between the tenth and twelfth years, height develops slowly and with a fair degree of uniformity. At twelve years of age, children should be 2¾ times their birth height, or 55 inches tall, which means an average annual gain of slightly more than 2 inches. From ten to fourteen years in girls, and twelve to sixteen years in boys, there is a rapid growth spurt, followed by a period of very slow growth until the age of eighteen or twenty years, when mature height is attained.

Predicting mature stature, according to Simmons (1944), is most difficult during infancy and during the preadolescent growth spurt. Adult stature, she found, is attained in boys as early as fifteen years and as late as twenty years. Among girls, mature stature may be attained as early as fourteen years and as late as eighteen years. How tall a boy or girl will be at maturity differs according to hereditary endowment. The average mature height for men is 67 inches, and for women, 64 inches. In Fig. 24 the curves show the percentage growth in height from birth to maturity for boys and girls.

Individual Differences. From birth to the eleventh or twelfth year, boys are, on the average, taller than girls. Girls, at the age of twelve, are slightly taller than boys. At the age of fifteen, both sexes are about the

same height. After that age, boys are taller than girls and retain that superiority in height during the remainder of the growth period.

Children who are tall before adolescence tend to be taller than the average at maturity, while those who are short before adolescence generally measure below average when they reach maturity. There is thus a definite relationship between height before and after adolescence.

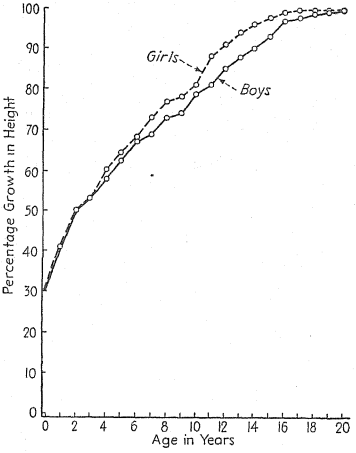

FIG. 24. Percentage growth in height for boys and girls from birth to maturity. (*From L. H. Meek, Your child's growth and guidance told in pictures. Lippincott,* 1940. *Used by permission.*)

Likewise, in the case of girls, those who mature early are taller than those who mature later. The girl who matures before thirteen years of age is taller at every age from six to fourteen than the girl who matures at thirteen or after thirteen.

Racial factors are important in determining the height of the child at all ages. Children of North European parentage are, on the average, taller than children whose parents come from southern European stock. Socioeconomic factors are likewise important, with children of the more favored groups averaging above those of the less favored groups. Children of the laboring classes tend, on the whole, to be shorter and weaker than those of the professional groups. In a comparison of boys of differ-

ent socioeconomic status, Meredith (1941) found that the average height for boys of the unskilled and the skilled occupational groups was, roughly, ¾ inch less than for boys of the professional and managerial groups.

Improved feeding, especially during the earlier years of life, is also important. Harvard students of this generation were found by Bowles (1932) to be 1⅓ inches taller and 10 pounds heavier than their fathers, while at four Eastern colleges girls averaged 1.1 inches taller and 3.9 pounds heavier than their mothers. Boys in the United States today, according to Meredith (1941), are 6 to 8 per cent taller than were those of half a century ago. Likewise, persons with specific physical defects tend to be smaller than the average in stature.

To determine the relationship between height and intelligence, Hollingworth (1926) measured a group of children from nine to eleven years old, who had I.Q. scores of 135 to 190. She compared this group with children whose I.Q. scores ranged from 90 to 110, and with another group having I.Q. scores below 65. The gifted group had a median height of 52.9 inches as compared with 51.2 inches for the average group and 49.6 inches for the group whose I.Q. scores were below 65. There thus seemed to be a definite relationship between height and intelligence, with bright children taller than dull children. Katz (1940) noted that among preschool children there is a tendency for "very superior" girls to be taller and heavier than the "superior" and for the "superior" to exceed the "average" in these measurements.

WEIGHT

The average baby at birth weighs from 6 to 8 pounds. Girl babies are, as a rule, lighter than boy babies. During the first week following birth, the baby normally loses weight, owing to the difficulty of becoming adjusted to a new method of taking nourishment, as well as to a new type of nourishment. By the end of the first month of life, however, the baby should not only regain the weight lost after birth but should begin to show a weight increase. At the age of four months, the weight should be double the birth weight, which means that the baby should weigh approximately 14 pounds. The average weight varies from 16 to 19 pounds at the age of eight months, and at one year the baby should be three times his birth weight, or about 21 pounds. This relatively slight increase during the final quarter of the first year is due to the fact that the baby's waking hours are spent mostly in creeping, crawling, and learning to walk.

During the second and third years, the average increase in weight is from 3 to 5 pounds annually. This means that the typical two-year-old should weigh 25 pounds and the typical three-year-old, 29 or 30 pounds.

Babies who are relatively heavy at birth weigh slightly above the averages given during the first two or three years of life. Artificially fed babies generally weigh less than breast-fed babies throughout the eight months following birth.

Increases in Late Childhood. From the third year, increase in weight slows down until the onset of puberty, with an average increase of 3 to 5 pounds annually. The child should be approximately five times his

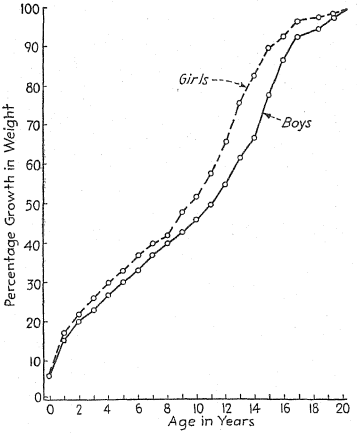

FIG. 25. Percentage growth in weight for boys and girls from birth to maturity. (*From L. H. Meek, Your child's development and guidance told in pictures. Lippincott*, 1940. *Used by permission.*)

birth weight at six years of age, which means a weight of 35 to 40 pounds. Beginning with the ninth or tenth year, in the case of girls, increase in weight occurs at a rapid rate and reaches its peak at the age of twelve years, with an average annual gain of 14 pounds. Increase in weight preceding puberty has been investigated by Van Dyke (1930) in girls maturing between the ages of twelve and fifteen years. The greatest increase in weight, an average of 14 pounds, occurred in the year before puberty, with the next greatest increase, 10.1 pounds, occurring 2 years before puberty and the same amount in the year of puberty.

For boys, the marked increase in weight at the time of puberty is delayed until the twelfth year, and the peak of weight increase comes

in the fourteenth year, an average annual gain of 15 pounds. The average weight for a boy at fourteen is 95.4 pounds and at sixteen, it is 116.7 pounds. During the remaining years of adolescence, increase of weight comes mostly from increase in muscular development and in the size of the skeletal system. Figure 25 shows the percentage growth in weight of boys and girls from birth to maturity.

Individual Differences. Boys are, on the average, heavier than girls at all ages except for two or three years, from eleven to fourteen, when the puberty spurt of girls precedes that of boys. Intelligent children are heavier for their height, Hollingworth (1926) found, than are average children of the same age. In the fall months, gain in weight is usually greater than at other times of the year, especially after the fourteenth year.

Boys in the United States today, Meredith (1941) reported, are 12 to 15 per cent heavier than were boys half a century ago. The average weight for boys of the unskilled and semiskilled socioeconomics groups is, roughly, 3 pounds less than that of boys from the professional and managerial groups. Factors contributing to this difference, he pointed out, are diet, housing conditions, health practices, and occupational demands.

PHYSICAL PROPORTIONS

At birth, the proportions of the body are very different from those of the adult (see Fig. 3). The child's growth therefore results not only in an increase in size but, of equal importance, in a marked change in the proportions of the different parts of the body. Likewise, not all parts of the body attain mature proportions at the same time. Some areas attain their mature size at one age while others attain maturity at earlier or later ages. But, by the age of sixteen or seventeen years, the different parts of the body have, for the most part, assumed their mature proportions, and the individual is similar in appearance to an adult.

Proportions of the Head. The *head* grows proportionately less after birth than do most other parts of the body, because it has to grow less to attain mature size. At birth, the length of the head is 22 per cent of the total body length. If these proportions remained constant, a mature man of 6 feet would have a head of about 16 inches in length instead of the average of 8 or 9 inches, thus resulting in a real monstrosity. From birth to maturity the length of the head doubles, but the total stature is 3½ times that at birth. Boyd (1935) has reported that the surface area of the head decreases from approximately 21 per cent of the total surface area of the body at birth to 13 per cent at five years, 10 per cent at twelve years, and 8 per cent at eighteen years.

The cranial part of the head is large and the facial area small at birth. At this time, the relationship of the face to the cranium is 1 to 8; at five years of age, it is 1 to 5; and at maturity, 1 to 2.5. Increase in head length is due mostly to increase in facial proportions, as the cranial or upper portions grow little from birth to puberty and none afterward. At the first month, the circumference of the head is two-thirds of that at three years; at six years, 90 per cent of adult size; and at twelve years, 95 per cent of adult size. At every age, the proportions of the head of a boy are greater than those of a girl.

Proportions of the Face. Because the upper part, or cranium, completes its growth so early, the head has a disproportionate look. The top of the head appears to be too large for the face. The lower part of the head throughout babyhood and early childhood is small and undeveloped, owing primarily to the lack of teeth at first and later to the smallness of the baby teeth. The facial skeleton becomes larger in proportion to the cranium from birth to seven years, thereby eliminating the "babyish look." Until the second, or "permanent," teeth have replaced the tiny baby teeth—and this is not until shortly before puberty—the mouth, chin, and entire lower part of the child's head are small compared with the upper part, where the brain development has progressed more rapidly. The forehead flattens, the lips fill out, and the face becomes oval instead of round as the child approaches puberty.

The *nose* is one of the most disproportionate of the facial features. For the first few years of life, it is small and rather flat on the face. Gradually, as the cartilage framework develops, the nose not only becomes larger but it also assumes a more definite shape. By the age of thirteen or fourteen years, the nose has attained its mature size, and the hairs of the nostrils have become thicker and stronger, especially in boys. This early maturing of the nose is apt to arouse much distress on the part of the adolescent, who believes that his face will be distorted throughout life because the nose is disproportionately larger than the other features. The changes that occur in the face from childhood to maturity are illustrated in Fig. 26.

Proportions of the Trunk. The "top-heavy" development of the baby militates against good balance, and this must be corrected before the baby can sit, stand, or walk. The change in proportions which is essential to good balance comes from a gradual lengthening of the *trunk* and *legs*. According to Bayley and Davis (1935), body build undergoes rapid changes during the early years of life. The baby becomes more thickset during the first year of life, as a result of a greater increase in the girths and transverse diameters than in lengths. This is shown in

the proportionally greater increase in weight than in height at this age.

Up to the age of six years, the trunk is twice as long and wide as it was at birth. The child becomes gradually slimmer until prepuberty, when the body widens out again. From the age of six years until adolescence, the increase in body length is approximately 50 per cent. By maturity, the birth dimensions are trebled. The thickness of the trunk at maturity is not quite 2½ times that at birth. The protruding abdomen so characteristic of the small baby flattens out from about the

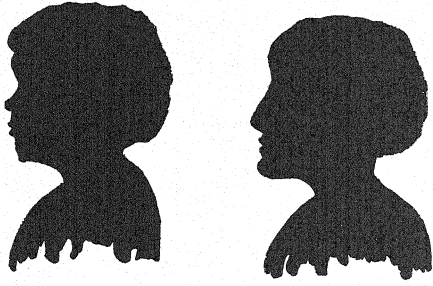

FIG. 26. Characteristic profiles at six and seventeen years of age. (*From L. Cole, Psychology of adolescence. Rinehart,* 1936. *Used by permission.*)

third year, and the shoulders become broader, resulting in a more triangular-shaped body than is usually found in babies.

During early adolescence, the *chest* deepens and becomes longer. The greatest increase in girth comes from fourteen to seventeen years in boys and from twelve to fifteen years in girls. The pelvis, which during the first years of life showed no distinct difference between the sexes, shows a striking difference in early adolescence. In girls, the pelvic arch broadens, and this results in the enlargement of the body circumference in the area of the hips.

Proportions of Arms and Legs. Changes in body proportions cause the body to become less apelike and more characteristically human. This is due to the relative increase in leg length. At birth, the *legs* of the infant are proportionately too short, the *arms* too long, and the hands and feet too small. Growth at different rates must, therefore, occur before mature proportions are attained. The length of the *arms* and *hands* increases between 60 and 75 per cent from birth to two years. At the age of eight years, the arms are nearly 50 per cent longer than at

two years. At this time, they are very thin, with no marked development apparent in the musculature. This is responsible for giving the child the spindly, "all-arms" look so characteristic of that age. From eight until sixteen or eighteen years, the growth in the length of the arms is slow, while development in the shape, owing to increase in musculature, is taking place. This occurs to a marked degree during puberty and is more pronounced in boys than in girls.

From birth to two years, the *legs* grow 40 per cent, and at eight years, they are 50 per cent longer than at two years. Thus the legs grow at a slower rate at first than do the arms. By adolescence, they are four times as long as at birth; at maturity, five times as long. As is true of the arms, the legs of the child are thin and spindly until puberty. Then, as the increase in length slows down, there is a growth in the muscular development, which results in a marked change in the shape of the legs.

The *hands* and *feet* of the newborn infant are very tiny. Before they can be used, there must be an increase in size as well as in muscular development. And the first two years of life are marked by rapid growth in both hands and feet. From then until puberty, growth is slow and, at that age, mature size is attained. By fourteen years, they are as large, or nearly as large, as they ever will be. To the boy or girl unfamiliar with the laws of growth, this is often a source of mental anguish. Many girls wear too tight shoes in the hope of checking the growth of their feet, and this is responsible for many of the serious foot disorders found in mature years. As nothing can be done to check the growth of the hands, the self-conscious adolescent tries to hide them by holding them behind his back or in his pockets.

THE BONES

Development in the bone structure of the child consists of growth in the size of the bones, increase in the number of bones, and change in the texture of bones. Bayley (1940), by the use of X rays, found that bone development follows the same general trend as growth in size. That is, development is most rapid during the first year, and with increasing age, the bones grow more slowly. By the age of five or six years, increases in size, though steady, are slight from one year to the next.

The long bones of the arms and legs grow at the ends during puberty, but the ends do not become firmly united with the shaft of the bone until several years after puberty. The pelvis bone shows a marked difference in boys and girls at puberty. In girls, the pelvic arch broadens and the transverse diameter becomes greater than the anterior-posterior

diameter. Accompanying this change is a muscular growth and a disposition of fat under the skin. This results in the enlargement of the circumference of the body in the area of the hips by several inches. Changes in the bone structure of the face often bring about marked changes in the child's face. When these changes occur, it is not uncommon to find that the child resembles the parent other than the one first resembled.

Number and Condition of Bones. At birth, there are 270 bones. By the age of fourteen years, the number of bones has increased to

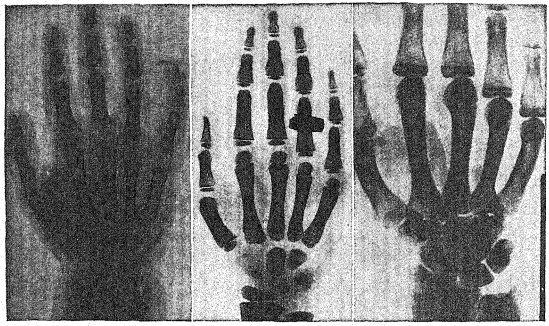

FIG. 27. Bone development in the hands of a male child at two, six, and sixteen years. (*From C. D. Flory, Osseous development in the hand as an index of skeletal development. Monogr. Soc. Res. Child Develpm.*, 1936, 1, No. 3. *Used by permission.*)

350. Instead of a further increase, there is a decrease in the number of bones in the body after puberty, so that by the middle of life, there are fewer than at birth, about 206. Roentgenograms, or X rays, of the wrist bones of a child illustrate this phase of bone development. At the age of two years, there are two or three wrist bones apparent; at six years, there are six or seven bones; while between twelve and fifteen years, the eighth bone appears. Figure 27 shows the development of bones in a male child at the ages of two, six, and sixteen years.

In the early months of postnatal life, the bone tissue is soft and spongy. Cartilage or membrane occurs in some places where there will later be bone. In some areas of the skeleton there are separate pieces of bone which will later fuse into one bone. In over 50 per cent of all babies, the fontanelles are closed by the age of eighteen months and in nearly all by two years. In girls, the closing occurs sooner than in boys.

The spine at birth is soft and thus easily distorted, because it is made of cartilage. From one-half to two-thirds of the entire growth of the vertebrae occurs during the first three years of life.

Because the bones are soft at first, the baby's body is pliable and he can get into strange positions without difficulty, such as sucking his toes when lying on his back. In addition to this, the bones are liable to be deformed, because of pressure, unless care is taken. The shape of the head can be flattened if the baby is allowed to sleep for too long a time on his back, or the chest will be flattened if he spends most of his sleep time on his stomach. Even in the elementary-school years, bone deformities result from too short shoes or from sitting in a cramped posture at a school desk.

Ossification. Ossification, or hardening of the bones, is entirely post-natal, beginning at the early part of the first year and ending shortly before puberty. Ossification takes place gradually, owing to calcium, phosphorus, and other mineral salts which are introduced into the bone structure. There is a gain of 60 per cent or more of mineral matter in the bones during the process of ossification. Ossification proceeds at different rates in different parts of the body. In girls, it is completed about 2 years sooner than in boys.

THE TEETH

The child has two sets of teeth—the "baby," or temporary, teeth and the permanent teeth. These two sets differ in several important respects: (1) There are 20 temporary teeth and 32 permanent ones. (2) The temporary teeth are smaller than the permanent ones. (3) The permanent teeth are of better quality and therefore more durable.

The growth of teeth is a continuous process from the fifth prenatal months, when the teeth begin to form in the jaw, until the wisdom teeth reach their full size, between the ages of twenty-one and twenty-five years. The eruption of the temporary teeth is accompanied by discomfort or actual pain, often causing the baby to lose his appetite and become irritable and nervous. Permanent teeth, for the most part, cut through the gums without any appreciable discomfort. The psychological significance of their appearance, so far as the child is concerned, is that each new tooth is further evidence that he is emerging from babyhood into a more mature state, and, as a result, he begins to assert himself or demand rights not previously given him.

Temporary Teeth. The first one of the temporary teeth makes its appearance between the third and sixteenth months, with the average age of appearance between the sixth and eighth months. In Fig. 28 are given the average ages at which the 20 temporary teeth appear.

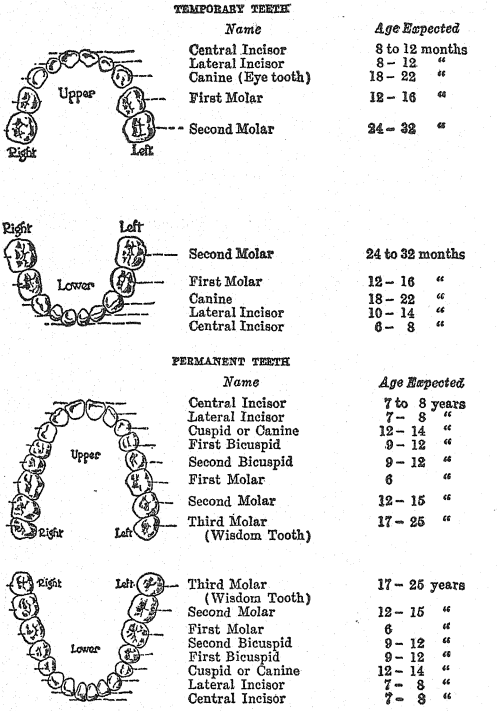

FIG. 28. Eruption of temporary and permanent teeth. (*Chart from J. Anderson and F. Goodenough, Your child year by year. Parents' Magazine*, 1930. *Used by permission.*)

The lower teeth, as a rule, erupt before the upper teeth. The time of eruption is variable and depends upon health, nutrition before and after birth, social status, race, and other factors which influence the baby's development. Generally, girls' teeth erupt slightly earlier than boys' teeth, and likewise they are shed at an earlier age to make way for the second, or permanent, set of teeth.

Permanent Teeth. Even after the temporary teeth have erupted, much activity goes on inside of the gums as the permanent teeth, except the four wisdom teeth, begin to calcify. The order of calcifying is the same as the later order of eruption. In Fig. 28 are given the ages of eruption of each of the permanent teeth.

On the average, the child at the age of six years has 1 or 2 permanent teeth; at eight years, 10 or 11 teeth; at ten years, 14 or 16; at twelve years, 24 or 26; and at thirteen, 27 or 28. At every age, girls are ahead of boys in the number of permanent teeth that have erupted. The last four of the permanent teeth, the "wisdom teeth," erupt between the ages of seventeen and twenty-five years, if they appear at all.

The relation of appearance of permanent teeth to the mental age of the child was studied by Cohen and Anderson (1931) in the case of 218 children, ages five to fifteen years, from a school for feebleminded. It was found that at all ages, the subnormal children had fewer teeth than the normal. Each of the teeth of the normal child erupted somewhat earlier than the corresponding teeth of the subnormal. The difference in age was least marked in the anterior and most marked in the posterior teeth. Permanent laterals were more often found to be congenitally missing in the defective than in the normal groups.

THE MUSCLES

Increase in weight at all periods of growth is due to the development of two types of tissue, *adipose* and *muscle tissue*. In the early years of childhood, the development of adipose tissue is more rapid than that of muscle tissue but, from the ages of twelve to fifteen years in girls, and from fifteen to sixteen years in boys, there is a marked increase in muscle tissue. The proportionate weight of the muscles to the body weight increases rapidly at that age as can be seen by the fact that at birth the muscles weigh 23.4 per cent of the total body weight; at eight years, 27.2; at fifteen years, 32.6, and at sixteen years, 44.2. Thus, growth of the muscles in proportion to body weight is slow in childhood and rapid after puberty.

The marked increase in muscle weight after puberty is one of the secondary sex characteristics which accompanies the onset of puberty. The circumference of the forearm, upper arm, calf, and thigh increases because of muscular development. The trunk rounds out, owing partly to adipose tissue and partly to muscle growth in the back and shoulders. The muscles become thicker and longer at this age. At maturity, they are five or more times as thick as at birth. The composition of the muscles changes from 72 per cent water and 28 per cent solid matter to 66 per cent water and 34 per cent solid matter. Consequently, the

muscles become firmer and stronger. Tests have indicated a tremendous increase in muscular power and strength during this period. This is especially apparent in the strength of grip tests.

DEVELOPMENT OF THE NERVOUS SYSTEM

The growth of the nervous system is very rapid before birth and in the first three to four years after birth. Growth during the prenatal period, as was pointed out in the chapter on prenatal development, consists primarily of increase in the number and size of nerve cells. During the postnatal years, on the other hand, growth consists primarily of the development of immature cells present at birth, rather than the formation of new cells. After the age of three or four years, growth of the nervous system proceeds at a relatively slow rate.

The Brain. Brain growth cannot be studied directly, but must be estimated from studying the brains of the dead or from external measurements of the cranial development of living children. These measurements show that brain growth is very rapid from birth to four years, slowing down between the ages of four and eight years, and then progressing very slowly until approximately the age of sixteen years, when the mature size of the brain has been attained. Since the bones of the skull are loosely connected by membranes during the first few months of life, ample space is left between the edges to allow for growth.

At birth, brain weight averages 350 grams as contrasted with adult weight, which ranges from 1,260 to 1,400 grams. One-fourth of the adult brain weight is attained by birth, one-half by the age of nine months, three-fourths by the end of the second year, four-fifths by the fourth year, and 90 per cent by the age of six years. To show how rapidly the brain grows in early childhood as compared with the latter part of childhood, it is interesting to note that at birth, brain weight is one-eighth of body weight; at ten years, one-eighteenth; at fifteen years, one-thirtieth; and at maturity, one-fortieth.

Even though the increase in the size of the brain is very slight during adolescence, owing to the fact that at the beginning of that period it has nearly attained adult weight, there is nevertheless continuation of development in the cortical tissues. By the eighth year, the brain is nearly its mature size but the development of intercerebral association tracts and the building up of gray matter are far from complete. Development is thus internal and cannot be measured in terms of size or weight.

CHANGES IN INTERNAL ORGANS

The increase in the size and weight of the child, during the growth years, is not due to the development of muscles or fatty tissue alone.

The different internal organs, connected with respiration, circulation, and digestion, are growing rapidly at this time, and this growth is partially responsible for the child's increased weight. A brief description of the development of the *respiratory, circulatory,* and *digestive systems* will show when these different types of development occur:

Respiratory System. The *lungs* at birth are small, as may be seen by the fact that the chest circumference at that age is smaller than the head circumference. By the age of two years, the circumference of the head and chest are the same; at fifteen years, the ratio of head and chest is 2 to 3, and at maturity, 3 to 5. The final shape of the chest is reached between the twelfth and thirteenth years. After that, the change is in size alone.

Throughout the adolescent years, the lungs increase in volume and weight. While the growth is especially pronounced right after puberty, during the early adolescent years, it nevertheless continues until the close of adolescence. Accompanying the growth of the lungs is an increase in the breathing capacity that is especially apparent just before and during puberty. At the age of seventeen years, girls, on the average, reach their adult vital capacity, while, in the case of boys, this does not occur until several years later.

Circulatory System. The *heart,* at birth, is higher in the chest, more horizontal in position, heavier, and larger in relation to body weight than at any other time in life. Just before puberty, its relationship to body weight is less than at any other time, while during adolescence there is an increase in relation to body weight. The muscle fibers of the heart increase in size and in number of contractile fibers during adolescence.

In early childhood, the heart is small while the *veins* and *arteries* are large; in adolescence the reverse is true. The veins are smaller in relation to the arteries in childhood than later. The blood vessels grow in length and area of cross section during adolescence, and the walls become thicker and of stronger texture. The result is that blood pressure is low in childhood and gradually increases in the beginning of puberty, owing to the increase in ratio of heart volume to size of the aorta. The pulse rate ranges between 120 and 140 in the early years of life as contrasted with the normal of 72 in adults.

In adolescence, the ratio between the width of the heart and the arteries is 5:1. The significance of this is that the heart pumps blood into an opening only one-fifth as wide as itself. This causes strain on the heart and increase in blood pressure. Strenuous exercise during early adolescence, when the circulatory system is undergoing such pronounced changes, is apt to cause faintness, dizziness, headaches, palpitations, heart

strain, valvular heart diseases, or enlargement of the heart. This is especially serious for boys because strenuous athletics in high school are engaged in, at this time, while girls, on the other hand, have usually passed through the puberty changes, when they enter high school.

Digestive System. In the baby, the *stomach* is tubular in shape, lies transversely in the body, and has a very small capacity. At birth, the capacity is about 1 ounce; at two weeks, it has increased to 2½ ounces; and, by the end of the first month, to 3 ounces. This contrasts with the baglike shape of the adult stomach, which not only holds a larger amount of food but which also empties more slowly. Because of the transverse position of the baby's stomach, it empties quickly, especially when the baby lies on his right side or is held semierect. Throughout childhood, the stomach empties more quickly than in adult life.

The young child has a smaller stomach and intestines, the digestive juices are less in amount, and the lining of the digestive tract is more delicate than is true of adults. The school child's stomach capacity is less than two-thirds that of the adolescent or adult. The digestive tract becomes mature at puberty.

Studies of the food consumption of nursery-school children made by McKay and Fowler (1941) showed that the boys ate more food, which gave them higher efficiency scores than did the girls. The boys helped themselves to more of the breadstuffs and desserts than the girls did, though the amounts of protein foods and vegetables were similar.

SLEEP

Sleep of children has, in recent years, come to be regarded as a psychological as well as a physiological problem. As a result, a number of investigations have thrown light on the close relationship between the mental and emotional state of the child and his sleep.

Amount of Sleep. How much sleep a child needs depends not only upon his chronological age but also on such factors as health, activity during the day, emotional tension, and depth of sleep. In an early questionnaire study by Foster, Goodenough, and Anderson (1928), the mean amounts of sleep at ages below eight years, as reported by mothers, decreased with advancing age, owing to the gradual discontinuance of the day nap. Erwin (1934) found that the amount of sleep children get is less than is advocated by medical authorities and psychologists.

Reynolds and Mallay (1933) have reported how much sleep young children at the Vassar College Institute of Euthenics had. The two-year-olds slept 12 hours 30 minutes out of the 24; the three-year-olds, 11 hours, 23 minutes; and the four-year-olds, 10 hours, 57 minutes. One hour was the mean length of time required to go to sleep at night, regard-

less of chronological age. Naps were found to drop out on the all-or-none principle. Even though daily fluctuations were great in the amount of sleep that the children had, the weekly, biweekly, and triweekly averages were in close agreement.

Sex Differences. Records of nursery-school children at home and at school were kept by McKay and Fowler (1941). They reported that boys get up earlier in the morning than girls and have shorter hours of sleep at night. There was no sex difference apparent in the time required for falling asleep at night or in the length of the naps. This meant less sleep during the 24 hours for the boys.

Giddings (1934) reports that girls are sounder sleepers than boys, they go to sleep more quickly, and they sleep more quietly throughout the night. Erwin (1934) also reported that girls sleep longer than boys.

Sleep Posture. The sleep behavior of babies during the first nine months of life has been studied by Kelting (1934). While the baby is falling to sleep, he found, the eyes are closed, followed by partly closed, then closed. Bodily movements occur in frequencies ranging from 0.44 to 0.76. Gurgling, smiling, vocalizing, and crying also occur. The arms are up and the fingers are generally extended. The legs are extended, flexed, and then extended. The head is turned to the right or to the left, and jerky body movements are followed by quiet.

The sleep posture of nursery-school children, according to Boynton and Goodenough (1930) changes on the average of once every 25 minutes during an average nap period of 79 minutes. The greatest amount of sleeping time, they found, was spent on the right side, the left side was slightly less favored, the abdomen ranked next, and the back was the least favored position. Changes in the posture of the whole body were more frequent than any single kind of partial changes in posture.

They found no correlation between sleep position and dextrality, suggesting that the preference for the right side is the result of factors other than handedness. Children whose postural habits were uniform tended to fall asleep more quickly than those whose habits were variable.

Motility. Movements of the body are least frequent during the early stages of sleep, Boynton and Goodenough (1930) noted. With increase in age, however, motility in sleep decreases. Giddings (1939) reported that for children between the ages of nine and fourteen years, the average length of time spent in motion during the 9 hours in bed amounted to less than 5 minutes. Because children do not fall to sleep at once, the first and the last half hour proved to be the most active. The difference between the activity of boys and girls of the same age was only 14 seconds.

In general, motility varies inversely with age from six to eighteen years, Renshaw *et al.* (1933) reported. The younger children that he

studied were quieter sleepers than the older ones. Below the age of 10½ years, there was no sex difference in motility. After that, however, there was a marked difference, with boys more active than girls. Loss of sleep, Renshaw *et al.* found, causes children to show less motility when they are asleep. The effect on the younger children proved to be more marked than on the older ones.

Factors influencing motility during sleep have been investigated by Garvey (1939). The most influential, he reported, as extreme temperatures; age (three-year-olds were more active than two- or four-year-olds); season (sleep in February and March was quieter than in April, May, and June); violent exercise between supper and bedtime; and sleep position (sleep is quieter when the child is on his back or his abdomen than when he is on his side).

Factors Influencing Sleep. Studies of naps and night sleep of children have revealed certain factors which tend to influence the quantity and quality of the child's sleep. These are

1. *Number of Children in the Room.* This, Bott *et al.* (1928) found, does not interfere with the sleep of children who have acquired good sleep habits. If, however, the child is a poor sleeper, the presence of other children in the sleep environment is sure to be a disturbing factor.
2. *Day of Week.* On Mondays, Bott *et al.* (1928) noted, there is less sleep in the nap period than on other school days.
3. *Naps.* During the early years of life, naps reinforce night sleep. As the child grows older, however, they tend to interfere with it.
4. *Bedtime.* Going to bed late does not guarantee sleeping late the next morning to make up for lost sleep. White (1931) found that among young children, the later they went to bed, the shorter was the total length of their sleep.
5. *Intelligence.* Within an age group, children with higher I.Q.s get less sleep than children with lower I.Q.s.

CHILDHOOD ILLNESSES

Childhood illnesses are important to a student of child psychology only insofar as they influence the behavior or attitudes of the child. There is evidence to show that their influence on the child's attitude toward self and, in turn, his behavior is too great to be overlooked.

Periods of Susceptibility. There are certain times, during the growing-up years, that are characteristically healthy, just as there are others that are characteristically unhealthy. During babyhood, diseases are frequent and often fatal. Diphtheria and pneumonia are the most serious illnesses at this age. Susceptibility to disease is very marked from three to six or eight years of age. Unless carefully segregated from other children, most boys and girls at this age are subject to a series of quarantines for different childhood diseases, as mumps, measles, chickenpox, whooping cough, scarlet fever, and diphtheria.

Normally, the period from six or eight years to the onset of puberty is a very healthy age, when physical strength and endurance are adequate to permit the boy or girl to engage in active play for hours at a time without any noticeable fatigue. Following the healthy period of late childhood comes the period of puberty, which is marked by many physical disturbances, few of which are fatal. Owing to the pronounced body changes occurring at this time, the body is more susceptible to upsets and diseases than at other times. The common physical disturbances accompanying puberty are indigestion, headaches, nervousness, eye troubles, heart troubles, skin eruptions, nosebleeds, anemia, general fatigability, changes in urea, and poor sleep.

Health Conditions. Even though many children are not actually ill, poor health conditions are detrimental to physical and mental growth. In an analysis of the health records of more than 6,000 Chicago children, Hardy *et al.* (1941) found poor general health conditions more frequent than good health in children of the lower income classes. Evidences of poor health were seen in more carious teeth, underweight, insufficient amount of fat, poor posture, rounded shoulders, bow legs, and flaring ribs.

Common Childhood Illnesses. While children may and do contract almost every kind of illness, there are certain illnesses which may be regarded as "typical" because they are so commonly found among children of given ages. In Fig. 29 are shown graphically the most common illnesses of early childhood as reported by Bayley (1940). These diseases Bayley has grouped in three major divisions: "colds," "infections other than colds," and "epidemic diseases." During the first three years of life, the common cold was found to be the most frequent of all illnesses, and it appeared with equal persistence at all ages within this range.

Other infections, such as influenza, bronchitis, and tonsillitis, also appeared during the first three years but showed a more uneven distribution, with peaks at the ages of one and three years. The epidemic diseases, such as measles, mumps, and scarlet fever, appeared in small numbers during the latter part of this period. Allergic reactions, such as milk rash, hives, and asthma, were found at every age, and very few children escaped them entirely.

Effect on Growth. How great an effect childhood illnesses have on physical growth depends upon the severity, the length, and the nature of the illness. Loss in weight is almost inevitable in any case of illness, no matter how slight it may be. A long and severe illness may result in a decline in growth in height.

Ordinary illnesses generally have no permanent measurable effect upon the body growth of school-age children, Hardy (1938) and Palmer (1936) reported. Temporary cases may occur but, on the whole, children with

frequent illnesses in childhood reveal no significant difference in their growth as compared with children who are relatively free from illness.

Modification in the growth of the bones occurs in severe illness, the muscles lose some of their tone and tend to become flabby, and there is a tendency to become easily fatigued. Certain illnesses leave permanent

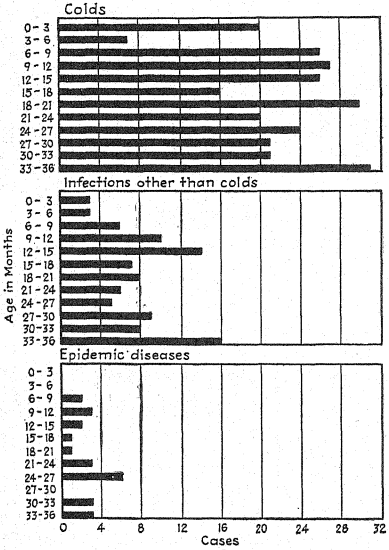

FIG. 29. Incidence of various illnesses from birth to three years. (*From N. Bayley, Studies in the development of young children. University of California Press*, 1940, *p.* 9. *Used by permission.*)

physical effects, such as a damaged heart following rheumatic fever or damage to the brain from encephalitis.

Effect on School Standing. There is no doubt that prolonged illness will affect the school child's status in his class. The longer he remains ill and the more severe the illness is, the greater is the effect likely to be.

How physical defects affect scholastic standing has been studied by Woofter (1940). The defects that were found to have the most pro-

nounced influence on the children's work in school were diseased tonsils, serious eye defects, and malnutrition.

Effect on Personality. Diseases during the growth years are serious not only because they retard physical growth but also because they hinder personality development and tend to develop undesirable personality traits. It is usually not the illness itself that is responsible for the personality disturbances but the fact that during illness the child is pampered and the routine of his life and responsibilities is temporarily abandoned. Should the illness last for several months, the child will not only be thoroughly "spoiled," unless marked precautions are taken to avoid it, but he will also find it difficult to readjust himself to his former playmates who have learned much about social adjustment during the time he was ill. The result is likely to be an unfavorable social attitude and the establishment of solitary play habits.

Imaginary Illness. There is no question that all children at some time or other complain of "not feeling well" as an escape from some unpleasant duty or to avoid punishment they justly deserve. How well developed imaginary invalidism is in childhood has not yet been determined. It unquestionably occurs more frequently during the adolescent years than during childhood.

Preston (1940), in an analysis of 100 cases of physical complaints without organic basis, found that in only a small fraction were pains simulated merely for gaining attention. The causes of illness were found to be trifling but in need of outside help for meeting the problems the children were trying to solve by physical complaints. In 95 per cent of the cases, distressing and intolerable situations were found to exist. Complaints of illness were used to ameliorate these conditions. Continuance of these complaints had actually impaired the physical health of four-fifths of the group and only 6 per cent of the children escaped some symptoms of mental ill-health as the whole organism became involved.

TEXT-FILM

The following McGraw-Hill Text-Film is recommended for use with Chapter V.

Child Care and Development (16mm sd MP 1½ reels). Gives over-all consideration to the habits of daily physical care that ensure a happy, healthy child. Correct attitudes and procedures toward establishing good habits of eating, sleeping, and bathing are covered. The question of proper clothing—warm and light for the infant, sturdy and functional for the toddler—is explored. The film shows that suitable and becoming clothing exert considerable psychological influence on personality development. And, finally, a section is devoted to the importance of outdoor exercise in the development of strong young muscles. Emphasis is on the attitude of parents and children to the routines of daily living.

Silent follow-up filmstrip, based on material contained in the motion picture, offers opportunity for review, testing, and further discussion.

CHAPTER VI

MOTOR DEVELOPMENT

One of the most rapid forms of development taking place during the early years of life is that of control over the different muscles of the body. From the helpless infant who cannot move his body from the place where he has been laid, or who cannot reach for and grasp an object held out to him, the young child emerges, in the period of a few short years, to a phase in which he is relatively independent of others.

Motor development consists of control of the movements of the muscles which, at birth and shortly afterward, are random and meaningless. But gradually, as the baby develops control over his muscular mechanism, specific pattern responses replace the earlier type of random movements. Instead of movements by the entire body, which occur in mass activity, only certain muscles or teams of muscles respond, and thus the energy expended is greatly reduced. Every child must develop effective coordination of his muscular mechanism if he is to emerge from the state of helplessness that is characteristic of the first months of life.

The development of muscle control is dependent upon a balance between contraction and relaxation of antagonistic muscles. As many of the muscles of the body are arranged in pairs, so that when one contracts the other relaxes or extends, the child must acquire the ability, partly through practice and partly through maturation, to bring about a proper relationship between the contracting and relaxing phases of the paired muscles. Should both contract with equal tension, immobile rigidity occurs, while simultaneous relaxation of both muscles results in no motion.

During the first five years of life, the most important development along motor lines consists of an elaboration of native reactions into motor skills of the sort that will prove to be useful to the child throughout life. After the foundation skills, such as self-feeding, dressing, walking, and running, have been established, the more complicated skills, as writing, playing the piano, skating, and dancing, are built up. The earlier in the child's life that motor control is brought about, and the earlier the necessary skills are established, the better. Because the young child is more plastic than the older one, and because he has fewer skills to interfere with his learning, he can develop skills more quickly and easily than

will be possible as he grows older. Likewise, his desire to learn motivates him to practice an activity until it is mastered, while an older child or adolescent is apt to become impatient if learning does not take place quickly.

METHODS OF STUDYING MOTOR DEVELOPMENT

Scientific studies of motor development have been made from day-to-day records of individual babies, kept in the form of baby biographies, from observational studies of groups of babies and young children, and

TABLE XII. COMPARISON OF THE BIOGRAPHICAL MEDIANS AND SHIRLEY'S MEDIANS

Behavior	Median age, weeks	
	Biographies	Shirley
Fixate near object	2.0	3.0
Start at sound	2.0	5.0
Follow moving object	3.0	5.0
Smile at person	6.0	7.0
Chest up, prone	8.0	9.0
Laugh	9.0	13.0
Vocalize syllable	10.0	8.0
Object to mouth	12.0	15.0
Play with own hands	14.0	13.0
Stare at stranger	14.0	14.0
Visually directed reaching	16.5	21.0
Grasp own foot	20.5	21.0
Sit alone	26.5	31.0
Pat, beat, or strike	27.5	29.0
Roll several feet	30.0	29.0
Stand holding furniture	38.0	42.0
Creep	39.0	44.5
Walk holding furniture	46.0	45.0
Pull to standing	46.0	47.0
Walk when led	47.5	45.0
Stand alone	51.0	62.0

Source: DENNIS, W., and DENNIS, M. G. Behavioral development in the first year as shown by forty biographies. *Psychol. Rec.*, 1937, **1**, 353. Used by permission.

from intelligence-test records. The results obtained from biographical studies of babies, Hurlock and McHugh (1936) found, were not satisfactory because baby biographies for the most part relate to babies of superior intelligence, and therefore data obtained from them do not hold for babies of average intelligence. In general, baby biographies tend to show an earlier development of motor coordination than do the observational studies or intelligence-test records of large groups of babies.

This criticism of baby biographies is well illustrated in a study made by Dennis and Dennis (1937). They compared the median ages at which 21 behavior items appeared in babies, as reported in 40 baby biographies, with the same items given by Shirley (1933). This comparison is shown in Table XII.

In 14 of the 21 items, it may be seen from the table above, the baby-biography medians are earlier than those given by Shirley. However, the difference in most cases is not more than 2 weeks, and in only two is the difference more than 4 weeks.

Observational studies of large numbers of children, in carefully controlled situations and often supplemented by moving pictures, have proved to be far more satisfactory than biographical records. These studies have been of two types, *normative* and *analytical*. Normative studies aim to determine the average, or median, age at which different phases of motor development occur for children as a whole. Analytical studies, on the other hand, are concerned with characteristics of motor development rather than the age at which different aspects of motor development occur. Many of the studies, especially the recent ones, combine both approaches. This may be seen in Burnside (1927) and Ames's (1937) studies of locomotion, contrasted with Gesell's (1928) normative summaries of motor development.

CHARACTERISTICS OF MOTOR DEVELOPMENT

Motor development does not occur in a haphazard fashion but rather in an orderly, predictable manner, as was pointed out in Chap. II. It follows a definite sequence, in which control occurs first in the head, then in the arms, hands, and upper part of the trunk; later, in the lower part of the trunk; and finally, in the legs and feet. This head-to-foot, or *cephalocaudal*, sequence is referred to as the "law of developmental direction." It is interesting to note that the sequence of muscle control is similar to that of prenatal development of structure in which the head is more developed than the legs. Development also proceeds in the *proximodistal* direction, which means that motor development occurs earlier in the structures lying nearest to the main axis than in those in a more remote area. Muscle control, for example, appears sooner in the arms than in the fingers.

Pattern of Motor Sequence. The motor sequence was first observed by baby biographers, who reported definite patterns in the development of motor control in babies. More recently, experimental studies of groups of babies have shown a pattern of development similar to that reported by the biographers but developing at a slower rate. An example of this is Shirley's (1931*a*) study in which she collected data from weekly exami-

nations of 25 babies from birth to two years of age. These data showed that eye coordination occurred first, following which came postural control, first in the head region and later in trunk, and finally came coordination of leg movements which led to creeping, crawling, standing upright, and then walking.

TABLE XIII. THE MEDIANS AND QUARTILES AND SEMIINTERQUARTILE RANGE FOR EACH STAGE OF MOTOR DEVELOPMENT

Description of stage	Number of cases	Age, weeks			
		Q^1	Median	Q^3	Q
First-order skills:					
On stomach, chin up	22	2.0	3.0	7.0	2.5
On stomach, chest up	22	5.0	9.0	10.0	2.5
Held erect, stepping	19	11.0	13.0	15.0	2.0
On back, tense for lifting	19	14.0	15.0	18.0	2.0
Held erect, knees straight	18	13.0	15.0	19.0	3.0
Sit on lap, support at lower ribs and complete head control	22	15.0	18.5	19.5	2.2
Second-order skills:					
Sit alone momentarily	22	20.5	25.0	26.0	2.7
On stomach, knee push or swim	22	22.0	25.0	27.0	2.5
On back, rolling	19	25.0	29.0	32.0	3.5
Held erect, stand firmly with help	20	29.0	29.5	33.0	2.0
Sit alone one minute	20	27.0	31.0	34.0	3.5
Third-order skills:					
On stomach, some progress	17	32.5	37.0	41.0	3.7
On stomach, scoot backward	16	34.0	39.5	45.5	5.7
Fourth-order skills:					
Stand holding to furniture	22	41.0	42.0	45.0	2.0
Creep	22	41.0	44.5	45.0	2.0
Walk when led	21	37.5	45.0	45.5	4.0
Pull to stand by furniture	17	42.0	47.0	49.5	3.7
Fifth-order skills:					
Stand alone	21	56.0	62.0	66.0	5.0
Walk alone	21	59.0	64.0	67.0	4.0

Source: SHIRLEY, M. M. *The first two years.* Minneapolis: Univ. Minnesota Press, 1931, Vol. 1, p. 99. Used by permission.

In working out the developmental sequence based upon median ages at which different patterns of behavior appeared, Shirley found that five distinct steps occurred in the developmental pattern. The five order stages in the motor development are summarized in Table XIII.

The way in which babies are held illustrates this developmental pattern very well. At birth and shortly afterward, the baby rests his head upon the shoulder or bosom of the person holding him, and, if held

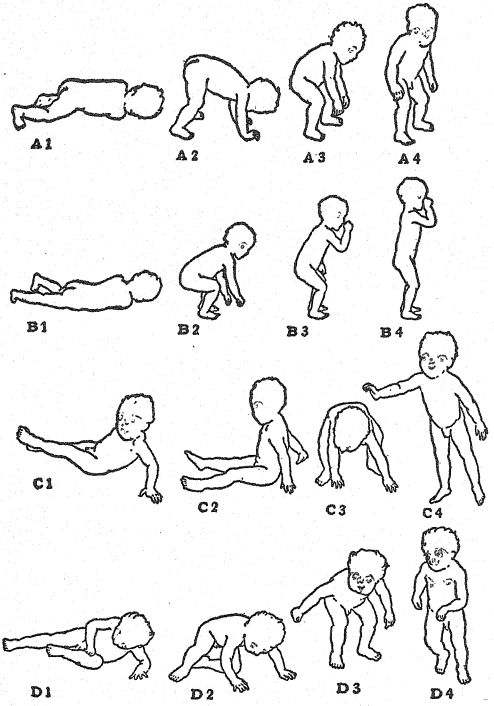

FIG. 30. Developmental phases in the assumption of an erect posture. (*From M. B. McGraw, Growth: a study of Johnny and Jimmy. Appleton-Century-Crofts*, 1935. *Used by permission.*)

away from the body, the whole head must be supported. Shortly, with control over the neck and head muscles, support is needed only at the nape of the neck, then at the shoulders, then in the back, and finally under the buttocks. The pattern of motor development is well illustrated in Fig. 30, showing the phases leading up to the assumption of an erect posture.

Individual Differences. Even though motor development follows a pattern of sequence that is inflexible in its broader aspects, individual differences in the detail of the pattern occur. Owing to lack of opportunity for practice, the child may be behind schedule in developing control over his hands and, as a result of encouragement or aid, ahead of schedule in walking. The whole pattern of development may be completed earlier or later than the standard times, because of individual differences in intelligence, health, and other factors.

Maturation and Learning. Development of muscle control comes partly as a result of maturation and partly from learning. It depends upon the maturation of neural structures, bones, and muscles, and a change in body proportions, as well as upon an opportunity to learn how to use the different muscle teams in a coordinated fashion. Before skilled movements can be learned, a state of maturity in the muscular mechanism of the child must exist. It is impossible to teach the child skilled movements until his nervous system is developed enough for him to profit from it. If teaching precedes maturation, time and energy will be wasted and interest on the child's part lost. The relative importance of maturation and learning has been discussed in detail in the chapter Principles of Development.

SEQUENCE OF DEVELOPMENT

Because of the mass of available experimental data relating to motor development, the material will be presented according to the "law of developmental direction" rather than according to chronological age. The material has thus been divided into the following topics: (1) motor development in the head region, (2) motor development of the arms and hands, (3) motor development of the trunk, and (4) motor development of the legs.

1. Motor Development in the Head Region

Control of the muscles involved in eye movements, smiling, laughing, and holding up the head develops very quickly when one considers the complexity of the behavior involved. *Eye coordination,* which is very poor during the first few hours after birth, improves so rapidly that, by the end of the fourth month, even the most difficult type of eye movements should be present in every normal baby.

Of the three types of eye coordination—horizontal, vertical, and circular—the horizontal appears first. Jones (1926) found that thirty-three days was the youngest age at which babies tested by her were able to follow a light horizontally, while by the 90th day all the babies tested were able to do so. The earliest appearance of vertical eye coordination

came on the 51st day, while by the 110th day it was present in all babies. Circular eye coordination appeared first on the 51st day and was present in all babies tested by the 130th day.

Morgan and Morgan (1944*a*) have given the following norms for eye coordination, based on their observations of babies at The Cradle in Evanston, Ill.

Age, Days	Reaction Pattern
10 to 10	Fixates
11 to 15	Follows horizontally short distance
21 to 25	Follows vertically short distance
31 to 35	Follows circularly short distance
36 to 40	Follows vertically all the way and reverse
36 to 40	Follows moving person short distance
46 to 50	Follows horizontally continuously
46 to 50	Follows moving person backward and forward some
51 to 55	Follows vertically continuously
51 to 55	Follows circularly all the way
61 to 65	Follows moving person continuously
71 to 75	Unbroken circular following

(Adapted from p. 177)

Optic *nystagmus*, the response of the eyes to a succession of moving objects, as when one looks from the window of a fast-moving train, has been studied by McGinnis (1930) from daily observations with the aid of an elaborate apparatus for the measurement of eye movements. He found that optic nystagmus occurred the first time the baby opened his eyes in the experimental situation, which came during the first 12 hours after birth. Ocular pursuit movements appeared for the first time during the third and fourth weeks.

The *blinking* reflex, present at birth, can be called forth by touching the face near the eyes, the eyelashes, and the corner of the eye, or by allowing a current of air to strike the eyes. Later, this same response becomes voluntary and can be called forth in anticipation of the touch of an object as it approaches the eye. Jones (1926) found that voluntary blinking occurred first at the age of forty-six days, while by the 124th day it was present in all the babies she tested.

Reflex *smiles*, in response to some tactual, organic, or kinesthetic stimulus, appear as early as the first week of life. "Social" smiling, or smiling in response to a smile from another person, or to a clucking sound made by another, does not occur until later. Using a smile and a clucking sound as stimuli, Jones (1926) reported that the first social smiling appeared at thirty-nine days of age, while the response was present in all babies tested at the age of ninety days. This response has been used by many writers as a criterion for the beginning of social behavior.

The ability to *hold up the head* during the first 20 minutes of life was shown by a large percentage of the infants studied by Bryan (1930). If a baby of one month of age is supported in a prone position at chest and abdomen, he can hold his head erect in a horizontal plane, and, at the age of two months, he can hold his head above the horizontal plane at an angle of as much as 30 degrees. Holding up the head when lying on the back is more difficult than it is when in a prone position and, consequently, develops later. Shirley (1931*a*) reports that the median age is twenty weeks.

When seated with suitable support on a lap, 75 per cent of the babies studied by Gesell (1928) could hold up their heads at the age of four months. By six months, nearly all were able to do so. At the age of sixteen weeks, Gesell (1940) reported, the baby's head maintains a mid-position, when the body is supine, and actively rotates, turning freely from side to side. At the age of twenty weeks, the head turns freely when the baby is sitting in a chair.

2. Motor Development of the Arms and Hands

From birth, the baby's arms and hands are in constant motion. At first, the movements consist of awkward jerks, random hittings, and opening and closing of the fingers. These movements occur even during sleep, though they are less frequent than when the baby is awake. The most common hand movement is toward the head, owing to the habit of position established during the fetal period. Sooner or later, by chance, the fingers touch the lips, producing a pleasurable sensation. This leads to a recurrence of the act and the establishment of the habit of thumb sucking, unless measures are taken to prevent it.

Defensive Coordinations. Sherman and Sherman (1929) studied coordination of the arms and hands by eliciting defense reactions through continuous pressure with the finger on the baby's chin. The degree of perfection of coordination was measured in terms of the number of arm movements occurring in pushing away the examiner's finger. They found that between twenty and forty hours of age, an average of 11 arm movements was necessary before a coordinated movement was made (see Fig. 31). With increase in age, defensive arm movements became less irregular, but some babies as old as thirteen days could not make a perfectly coordinated movement in one trial.

Thumb Opposition. In the grasping reflex, which appears at birth or shortly afterward, the thumb and fingers act together as a hook, by which the baby supports his weight when the stick he grasps is raised. Before the hand can become useful for purposes other than grasping, the thumb must work in opposition to the fingers and thus function as a

separate unit. *Thumb opposition* in grasping occurs, normally, between the third and fourth months and, in picking up objects, between the eighth and ninth months. Idiots do not use the thumb in opposition to the fingers because they cannot spread the thumb and first finger to the angle of 90 degrees as the normal individual can.

Thumb opposition was studied by Gesell and Halverson (1936) by means of moving pictures. In the accompanying table are given the ages at which different postures of the fingers occurred in grasping a cube or ball placed on a table before the baby. Complete thumb opposition was found at ages ranging from thirty-two to fifty-two weeks.

TABLE XIV. DIGITAL PURPOSES IN GRASPING CUBE AND BALL

Thumb posture	Age, weeks							
	16	20	24	28	32	36	44	52
Adducted back of object	6	..	1					
Adducted front of object	1							
Adducted vs. adjacent surface of object	23	32	21	18	6	4	1	1
Partly adducted; partly opposed	1	..	7	5	4	3	..	2
Opposed	..	..	..	11	16	22	33	29
Fingers which hold object								
2, 3	2	4	4	11	12	8	25	17
2, 3, 4	5	3	9	5	3	12	7	11
2, 3, 4, 5	7	8	6	8	6	4	1	2
2	..	..	..	..	1	2	..	1
3, 4	2	6	4	3	2	2	1	1
3, 4, 5	10	7	6	6	2	1		
4, 5	4	4	..	1				
4	1							

Source: GESELL, A., and HALVERSON, H. M. The development of thumb opposition in the human infant. *J. genet. Psychol.*, 1936, **48**, 347. Used by permission.

Eye-hand Coordination. Reaching and grasping, except in cases where the hand accidentally touches the stimulus, require eye-hand coordination, or the working together of the eyes and hands so that the former directs the movements of the latter. This is not present in the random reaching and grasping that appear shortly after birth, nor does it appear until thumb opposition is established. By the eighth month, eye-hand coordination is perfected to the point that random reaching and grasping no longer exist.

Eye-hand coordination has been studied by Watson and Watson (1921) by suspending a stick of candy within easy reaching distance of a

baby. Before the 122d day, the grasping was slow, clumsy, and without thumb opposition. By the 171st day, a well-coordinated movement, with right-hand preference, was established. When the baby is six to seven months old, he has well enough established eye-hand coordination to enable him to pick up little objects that he reaches for. In doing so, his gaze is directed toward the object, his mouth is generally open, both hands are held toward the object, with one in the lead, and the body is bent slightly forward.

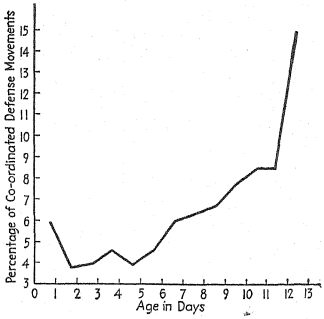

FIG. 31. Percentage of coordinated defense movements of the arms, in response to pressure, according to age. (*From M. Sherman, I. C. Sherman, and C. D. Flory, Infant behavior. Comp. Psychol. Monogr.*, 1936, **12**, No. 4. *Used by permission.*)

McGraw (1941*b*) found the following six phases in reaching-prehensile behavior: (1) the *newborn* or *passive* phase, in which no overt response is made to an object held within the visual field; (2) the *object-vision* phase, in which the infant begins to fixate and to respond unmistakably to objects within the near visual range, and which occurs a few weeks after birth; (3) the *visual-motor* phase, in which approaching movements of the upper extremities and digits are evoked as the child's gaze is cast upon the object; (4) the *manipulative and deliberate* phase, in which the child moves his arm toward the object but withdraws before actually touching it; (5) the *visual-release* phase, in which the child can appraise, by one brief look, the essential factors such as the size and shape of the object, its distance, motility, etc., and then glance away, even as the motor movement is being completed; (6) the *mature* phase, occurring when the visual and neuromuscular aspects of the performance have been reduced to the minimum essentials required by the circumstance.

The ability to reach for an object and carry it to the mouth develops

early, at approximately the age of the opposed thumb development. Jones (1926) found that the youngest of the babies tested by her to reach for an object and carry it to its mouth was 116 days old. By the 269th day, all the babies tested had developed this ability. Both Kuhlmann (1922) and Gesell (1928) place it as a test for the six-month-old level.

Reaching and Grasping. Purposive reaching and grasping appear early during the first year of life. At first, the baby waves with one or both arms when an object is held before him, but he cannot reach it except by chance. By the fourth month, he can reach purposefully for an object and can grasp it with few random movements. This is more difficult when the object is dangling before the baby, as in the case of a ring held on a string, than when the object is stationary, as a pellet on the table. It is likewise more difficult when the baby is in a sitting position than when lying on his back. The ability to reach for objects out of reach and grasp them independent of direct stimulation of the palm of the hand appears around the fifth month. The grasp is only partial, however, until the seventh month.

An analysis of the baby's method of reaching and grasping a cube placed in front of it has been made by Halverson (1931) and Gesell and Halverson (1936) with the aid of moving pictures. In reaching for the cube, the baby's first approach met with success at the age of twenty-four weeks. Speed in reaching was found to increase up to the age of thirty-two weeks and then decrease.

The approach to the cube took three different forms, the *backhand sweep*, the *circuitous sweep*, and the *direct approach*. From sixteen to twenty-eight weeks, either the backhand or circuitous approach was used; from thirty-two to thirty-six weeks, a less circuitous form of approach predominated; and by the ages of forty to fifty-two weeks, the direct approach was the usual one. Up to the age of twenty-eight weeks, the hands are lifted high in reaching for the cube, but from then until the fifty-second week, the height of the approach gradually decreased. In Fig. 32 are illustrations of the child's hand in grasping different objects.

Ten types of grasps appeared in the genetic series: (1) no contact, (2) contact, (3) the primitive squeeze, (4) the squeeze grasp, (5) the hand grasp, (6) the palm grasp, (7) the superior-palm grasp, (8) the inferior-forefinger grasp, (9) the forefinger grasp, and (10) the superior-forefinger grasp. The two hands were used in grasping until the baby was twenty-eight weeks old, while after that the grasp was with one hand, the other hand resting on the table or following behind the one used but remaining suspended in the air. By the age of sixty weeks, grasping closely approximated in form that of an adult.

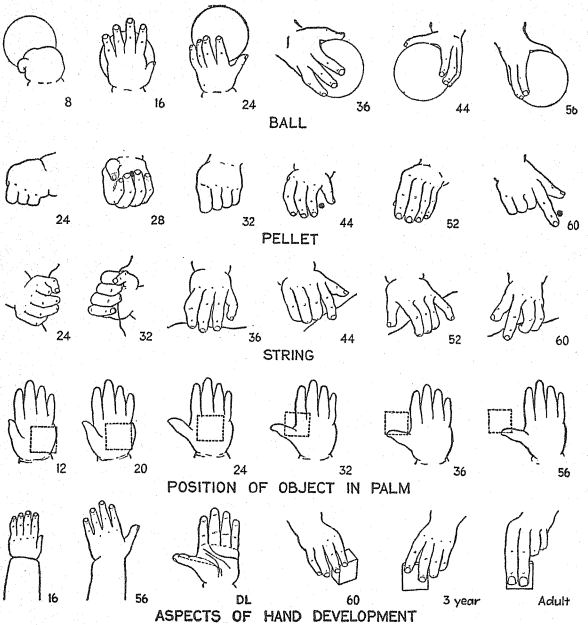

FIG. 32. Illustrating a series of grasps in developmental sequence for each of three objects: ball, pellet, and string. (*From H. M. Halverson, A further study of grasping. J. genet. Psychol.*, 1932, **7**. *Used by permission.*)

This figure also shows the six successive positions on the palm against which the fingers press objects, such as cubes. Under the caption, *Aspects of Hand Development*, appear in order: the forearm of a 16-week infant, the forearm of a 56-week infant, the developmental line (note broken line) of opposition in grasping, and digital grasping by a 60-week infant, by a 3-year-old child, and by an adult, respectively.

The ability of babies to grasp and hold one, two, or three objects was studied by Lippman (1927). The objects offered were a tongue blade, bell, rattle, scissors, block, metal tube, piece of white paper, and steel tape measure. The results shown in Table XV were obtained.

From these results, Lippman concluded that the average baby of five months of age should be able to accept one object when handed to him, while the average baby of seven months should be able to accept two

TABLE XV. ABILITY TO GRASP AND HOLD ONE, TWO, AND THREE OBJECTS

Percentage of the Babies	Age, Months
Acceptance of First Object	
8.3	4
58.8	4½
85.0	5
91.6	6
Acceptance of Second Object	
35.3	4½
74.9	6
77.3	8
85.0	8
Acceptance of Third Object	
33.3	6
40.9	8
80.0	11½
90.0	12–13

Source: LIPPMAN, H. S. Certain behavior responses in early infancy. *J. genet. Psychol.*, 1927, **34**, 439. Used by permission.

FIG. 33. Early feeding behavior with a spoon. (*H. J. Heinz Company.*)

objects, and the average age for the acceptance of three objects is ten months.

Eating. Hand control in eating has been carefully investigated. By the age of eight months, the baby can hold his bottle after it has been placed in his mouth, and one month later, he can put it in or take it out

at will. At the end of the first year, he can drink from a cup and eat from a spoon, though he cannot handle them successfully for himself. During the second year, the little child begins to feed himself, with some spilling at first. In the beginning, he uses only his spoon and drinks from a cup, holding on with both hands. Gradually, with practice, his skill improves and he then lets go with one hand, holding his cup with the other hand alone.

By the end of the second year, the child learns to use his fork in addition to his spoon, but he is still unable to cut his food or prepare it for eating. During the third year, the child can spread butter or jam on his bread, and a year later, he will try to pull his meat apart with his knife. Real cutting, however, is too complicated a skill to be learned much before the fifth year. Throughout the entire period of mastering skills in self-feeding, the child's attention must be concentrated on the task at hand if successful results are to be obtained.

Gesell (1940) has observed a definite sequence in the development of the child's ability to feed himself with a cup and spoon, with the ages at which each type of skill normally appears as follows:

TABLE XVI. DEVELOPMENT SEQUENCES IN EATING

	Self-feeding (Cup)
15 months	Holds cup with digital grasp. Apt to tip it too quickly with wrist rotation and thus spill most of contents. Close supervision is necessary.
18 months	Lifts cup to mouth and drinks well.
	Hands empty cup to mother; if she is not there to take it, is apt to drop it.
21 months	Handles cup well: lifting, drinking, and replacing.
24 months	Holds small glass in one hand as drinks.
36 months	Pours well from a pitcher.
	Self-feeding (Spoon)
15 months	Grasps spoon and inserts into dish.
	Poor filling of spoon.
	If brings spoon to mouth, is apt to turn it upside down before it enters mouth.
18 months	Fills spoon.
	Difficulty in inserting spoon in mouth; apt to turn it in mouth.
	Considerable spilling.
24 months	Inserts spoon in mouth without turning.
	Moderate spilling.
36 months	Girls may have supinate grasp of spoon.
	Little spilling.

Source: GESELL, A. *The first five years of life.* New York: Harper, 1940, p. 242. Used by permission.

Dressing. Control of the hands to enable the child to dress himself comes later than the ability to remove his clothing. It is easier, for

example, for a little child to pull off his socks and shoes than it is to put them on, and the motor skill involved in the former is much less than in the latter. The period of most rapid improvement in dressing is between 1½ and 3½ years (Key, *et al.*, 1936). Different garments present different degrees of difficulty. Stockings are easier to put on than shoes, and the putting on of a garment is easier than adjusting and fastening it. Girls as a rule dress themselves earlier and more efficiently than boys, owing partly to more flexible rotation at the wrist, partly to better general motor coordination, and partly to the greater simplicity of their clothing.

Wagoner and Armstrong (1928), using specially constructed jackets buttoning in front, at the back, and on the side, with buttons of different sizes, loops, and buttonholes as fasteners, found that unbuttoning was easier than buttoning and could be carried out at an earlier age. From the age of two years, the child enjoyed trying to button and unbutton the jacket. From three to five years, he was able to button the buttons, if the fasteners were in front or on the side of the jacket. Loops proved to be easier to manipulate than buttonholes. The time involved in buttoning decreased from the second to the fifth year, and girls were found to be more proficient in this skill than boys.

In dressing, eye-hand coordination is necessary until the child learns to dress himself so automatically that he can do so by "feel" alone. While learning to dress himself, the child must see the button, hook, or fastener before he can manipulate it. If he cannot see the fastener, as is the case when it is located at the neck, shoulders, or back of the costume, he cannot fasten it. By three or four years of age, most children can deal with fasteners in the difficult positions just referred to if they look in the mirror. Only after the skilled movements involved in dressing are well developed, around the sixth year, can the child's hands manipulate fasteners without the aid of the eyes to guide the hands.

Ball Throwing and Catching. The ability to throw and catch balls requires well-coordinated movements of the arms and hands. Gutteridge (1939) found that at the ages of two and three years none of the children she observed threw a ball well. At four years, many of the children were practicing, but only 20 per cent could throw or catch well. At five years, 74 per cent were proficient and at six, 84 per cent.

Marked variations in skill were found at each age. The size of the ball was found to make some difference in the manner of throwing. At first, both hands were used and there was mass movement of the body. Gradually, the movements became more specialized and one hand only was used.

At the age of four years, the children were found to be awkward in

bouncing a ball. At 6½ years, only 61 per cent were able to bounce a ball well, Gutteridge reported. Boys were found to be less skillful in this respect than girls. Ball catching was likewise found to be difficult. At four years, only 29 per cent were proficient; at five years, 56 per cent; and at six years, 63 per cent could catch balls. Once again, girls were found to be more proficient than boys.

The methods used in catching a ball showed definite stages, Gutteridge noted. At first, the child used the whole body to clasp the ball; then two arms, with less general movement. Later the child perfected a coordinated movement of hand or hands to catch the ball between the palms. The size of the ball was found to be important. A ball 5 inches in diameter was caught best by five-year-olds. The six-year-olds catch well with a ball of 12 inches; only half are successful with a ball of 8 inches, and 82 per cent with a ball of 5 inches.

Writing. The development of skills used in writing follows a fairly definite pattern, Hildreth (1936) found. Only scribbling is found among children under 3 years of age. Between the ages of 2 and 3½ years, there is the beginning of writing, with a tendency toward the horizontal and some systematic up-and-down scratching. Between 3½ and 4 years of age, there is a slight tendency to make discrete symbol units, though these are scarcely recognizable as letters.

Occasionally, a child of 4 or 4½ years will make a simple letter, as *H* or *O*, correctly but most letters are unrecognizable as such. One half year later, some letters are correctly formed. Between the ages of 5 and 5½ years, there is more firmness of control, regularity, ease, and rapidity of writing and better alignment. Improvement is noted between the ages of 5½ and 6 years, though occasionally there is a letter reversed. Between 6 and 6½ years, the chief improvement is in speed.

Other Hand Skills. Strang (1938) and Gesell (1940) have reported other hand skills which normally appear in early childhood at fairly predictable ages. According to Strang, the child of two to three years can drive nails and by six, a child can use his skills in carpentry to make a table, a wagon, or a boat. He can carry a glass or pitcher of milk without spilling it and can use scissors in following roughly the outline of pictures. During the first 3 years of school, the child can mold with clay, can construct with wood, make cookies, and sew.

Eighty-five to 100 per cent of five-year-olds, according to Gesell, can fold paper diagonally, copy a square, and trace around one of two diamonds drawn on paper. Between 65 and 84 per cent can draw a triangle, a diagonal, a "recognizable" picture of a man; can put toys neatly away in a box; and can wash themselves without getting their clothes very wet.

Handedness. Genetic studies of babies have shown that during the early months of life, the baby is ambidextrous and shows no hand preference at all. By the middle of the first year, however, most babies have demonstrated clearly an unequal use of the two hands, both in preferential use and in greater strength. Several months later, by the ninth month, hand preference is definitely marked. The baby no longer

FIG. 34. The baby is ambidextrous at first. (*Courtesy of Childhood Interests.*)

needs to use both hands in grasping or handling objects but is able to get along satisfactorily with one hand.

Giesecke (1936) noted that among babies sixteen hours to three or four months of age, the greatest differentiation between the hands was in the activity of the small-muscle groups, such as those of the fingers and wrists. Babies from six to seventeen months of age showed that there is a positive relationship between differences in amount of spontaneous activity of the two hands and the preferential use of the hands in reaching for objects.

Lederer's (1939) longitudinal approach to the study of handedness showed that changes in handed status occur more frequently in the first than in the second year and that the chances are that they more often occur from left-handed status than from right. A temporary dominance of the left hand is common during the first year.

In an attempt to discover just when such shifts in hand dominance

take place, Gesell and Ames (1947) studied children from eight weeks to ten years of age by cinema records. They found marked shifts in handedness, especially during the first year of life. The characteristic age shifts in handedness of children, all of whom later showed definite, clear-cut right-handedness, are summarized in Table XVII.

TABLE XVII. SCHEMATIC SEQUENCE OF MAJOR FORMS OF HANDEDNESS

16–20 weeks	Contact unilateral and, in general, tends to be with left hand.
24 weeks	A definite shift to bilaterality.
28 weeks	Shift to unilateral and oftenest right hand is used.
32 weeks	Shift again to bilateral.
36 weeks	Bilaterality dropping out and unilaterality coming it. Behavior usually characterized "right" or "left." Left predominates in the majority.
40–44 weeks	Same type of behavior, unilateral, "right" or "left," but now right predominates in the majority.
48 weeks	In some a temporary, and in many a slight, shift to use of left hand—as well as use of right—either used unilaterally.
52–56 weeks	Shift to clear unilateral dominance of right hand.
80 weeks	Shift from rather clear-cut unilateral behavior to marked, interchangeable confusion. Much bilateral use of nondominant hand.
2 years	Relatively clear-cut unilateral use of right hand.
2½ to 3½ years	Marked shift to bilaterality.
4 to 6 years	Unilateral, right-handed behavior predominates.
7 years	Last period when left hand, or even both hands bilaterally, are used.
8 years *ff.*	Unilateral right once more.

Source: GESELL, A., and AMES, L. B. The development of handedness. *J. genet. Psychol.*, 1947, **70**, 157. Used by permission.

Gesell and Ames noted that, while nearly all children follow a comparable sequence, it may be at different rates and with varying emphasis of successive stages. Handedness, they maintained, is not a simple trait. There is no such thing as perfect ambidexterity, either right- or left-handedness. "Handedness," according to them, "is a product of growth."

Hildreth (1948) observed 44 nursery-school children to determine manual dominance in eating, play, and other activities of the nursery school. She noted that the trend toward right-handedness increased in the three-year group as compared with the two-year-olds, but dropped again for the four-year-olds when left-handedness increased. There were more instances of left-handedness and ambidexterity among the boys than among the girls.

Explanations of Handedness. Whether the baby is naturally right- or left-handed, or whether the predominant use of one hand is the result of training and social conditioning, has been a question of dispute for

generations. The most common belief is that handedness is a native trait, and any attempt to interfere with it will lead to serious nervous disorders, apparent most often in speech defects. Bryngelson and Clark (1933) maintain from their studies that left-handedness is a sex-linked characteristic transmitted usually from the male through the female and then back to the male.

Several explanations have been given for preferential use of the right hand. One is that the left side of the cerebrum is functionally superior to the right and thus determines right-hand preference. Another is that the right hand is structurally superior to the left, owing to the position of the fetus in the uterus. Still another is that handedness is a product of "sideness," or lateral dominance, with one side functioning spontaneously in preference to the other in involuntary acts, such as focusing one eye.

This point of view was stressed by Giesecke (1936) from the records made of the spontaneous use of the hands of babies from two to eight months of age. He maintains that hand preference "may have a physiological basis in the tendency toward greater activity in one side of the body, and also a psychological basis in the greater amount of practice and training received by the hand of the dominant side due to its more frequent use in the early development of manual skills."

Watson (1921) has explained handedness as due to social conditioning. To test handedness in babies, he attached linen thread to the baby's hands and to levers that produced tracings on a smoked drum with every movement made by the hands. From data obtained by the use of this technique, he concluded that handedness is not an "instinct" but a "socially conditioned" form of behavior.

Commenting on the effects of training in the case of nursery-school children, Hildreth (1948) noted that

> those acts that are most strongly influenced by the child's parents or teachers tended to show high right-handed indices. Those acts were eating with spoon and fork, writing or crayoning, and to some extent, throwing. Young children tend to be right-handed in the trained things, either-handed in the untrained. Right-handedness appears to be learned behavior, initiated largely through the use of eating implements. Children who get an early start in right-handed eating tend to become right-handed. There tends to be more right-handedness in acts that are subject to social censure when performed with the left hand (p. 43).

Norms for Hand Skills. Tests of intelligence and motor development have shown what hand skills one can expect to find in a normal child at different ages. At twelve months, the baby can hold a pencil or crayon and can remove a paper cap from his head. At the age of two years, he

can open boxes, unscrew lids from bottles or jars, turn the leaves of a book, build a tower of four or five blocks, put pegs in holes, insert a circle, square, or triangle in a form board, scribble with crayon or pencil, string beads, and cut a gash in paper with scissors.

TABLE XVIII. NORMS FOR ARM AND HAND SKILLS

Activity	Motor Age, Months
Ball throwing (9½-inch ball)	
4 to 5 feet	30
8 to 9 feet	44
12 to 13 feet	57
Ball throwing (16¼-inch ball)	
4 to 5 feet	30
8 to 9 feet	53
12 to 13 feet	Above 72
Catching ball (9½-inch ball)	
Arms straight, success in two or three trials	37
Elbows at side of body, failure or success in one trial	55
Catching ball (16¼-inch ball)	
Arms straight, success in two or three trials	34
Elbows at side of body, failure or success in one trial	51

Source: Adapted from WELLMAN, B. Motor achievement of preschool children. *Childhood Educ.* 1937, **13**, 311–316. Used by permission.

By the third year, the child can take care of many of his bodily needs, such as undressing himself, feeding himself, going to the toilet, and washing himself; can dry dishes, dust, carry a tray, string four beads in 2 minutes, build a bridge of three blocks in imitation of a given model, and copy a circle in imitation of a model. At the age of five years, the child should be able to fold a triangle from a paper 6 inches square in imitation of a model, copy a square when given a model to imitate, and tie a single knot around a pencil with a shoelace after looking at a model of a knot. From that age, skilled movements with the hands may be acquired quickly and easily if the child is given an opportunity to learn and guidance as to the most efficient methods to use.

Norms for arm and hand skills in ball throwing and catching have been given by Wellman (1937) in Table XVIII.

3. MOTOR DEVELOPMENT IN THE TRUNK

Turning. The ability to turn the body from side to side, or from back to stomach, is not present at birth. By the second month, the baby should be able to turn from side to back; by the fourth month, from back to side; and, by the age of six months, to make a complete turn from stomach to stomach. This complete turn is not necessarily made at one time at first but rather, several partial turns, with rest periods between each, finally result in a complete turn of the body.

Rolling of the trunk comes from flexing the hips and stretching out the legs at right angles to the trunk. Schaltenbrand (1928) has described the method of rolling used by babies when they roll from their sides or backs onto their stomachs. In turning, the body moves first in the head region and last in the legs. The baby turns his head, then his shoulders, then his pelvis, and finally, with a pushing, kicking movement of his legs, manages to turn his entire body.

Sitting Alone. The ability to sit alone, without any support, depends upon the development of the heavy muscles of the back. Before he can sit alone, the baby must have his whole trunk under control. At the age of sixteen weeks, according to Gesell (1940), a baby can pull himself to a sitting position. The body is no longer uniformly rounded but curves only in the lumbar region.

At twenty weeks, the baby can sit, when supported, with his body erect. If unsupported, he will lean forward passively, though his head is kept erect. At twenty-eight weeks, when pulled to a sitting position, the body is momentarily erect, though the baby tends to lean forward. Between the ninth and tenth months, the average baby should be able to sit alone, without support, for 10 or more minutes. When he becomes tired, he slumps against some support or goes into a reclining position on his back or stomach.

Peatman and Higgons (1942), in a study of more than 200 babies reared with a relatively optimal degree of pediatric and home care, found the median age for sitting alone for 1 minute or more to be 7 months for boys, 6.5 months for girls, and 7 months for both boys and girls. This compared with 7.1 month for Shirley's (1931*a*) group or a difference of about 3 days, and 7.4 months for Gesell and Thompson's (1934) babies.

Method of Sitting. When the baby first sits alone, he often leans forward to keep his balance. His arms are generally outstretched at the side of his body, to help him to maintain his balance, and his legs are bowed, with the soles of his feet turned toward each other, to give him a wider base for balance. When seated in this way, the baby cannot raise himself to a standing position. If he tries to move, he generally topples over. After acquiring the ability to sit alone, many babies rock back and forth as a playful stunt. In Fig. 35 are given the characteristic positions of the baby's body in the development of a sitting posture.

Schaltenbrand (1928) has studied the method by which the baby comes to a sitting position. At first, the baby goes from a dorsal to a sitting position by turning his whole body to a ventral position, then squats on all fours, and finally pushes himself into a sitting position. By the second and third years, however, he found that the baby ceases to turn the whole body axis but leaves the pelvis in contact with the floor

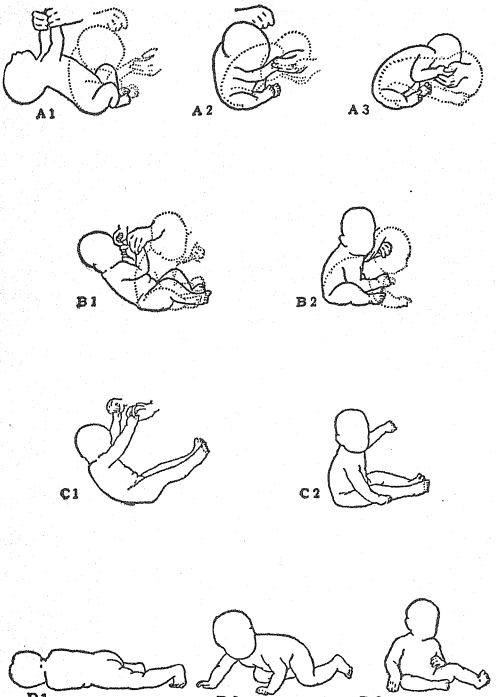

FIG. 35. Development of a sitting posture. *A*1, 2, and 3 illustrate the passivity of the newborn when raised from a supine to a sitting position. *B*1 shows infant beginning to take active part in the rising position; *B*2, dotted line illustrates extension of upper extremities in order to prevent falling forward. *C*1 indicates a postural reversal from *A*1; *C*2 shows maintenance of erect sitting posture. *D*1 illustrates rolling prone preparatory to the independent assumption of a sitting posture; *D*3 shows the infant able to maintain erect sitting position without support on upper extremities. (*From M. B. McGraw, Growth: a study of Johnny and Jimmy. Appleton-Century-Crofts*, 1935. *Used by permission.*)

on one side, supporting himself with his arm on that side. By the fourth or fifth year, the adult method of sitting develops, in which the body is rolled up symmetrically, with the aid of the arms on both sides.

Sitting Down. Dropping from a standing to a sitting position requires nearly as much practice before it can be learned as is needed for the baby to pull himself to a standing position. At first, when the baby sits down, he falls or topples over by giving way in the lower part of his trunk. Gradually, he learns by trial and error, combined with demonstration, how to bend his knees and slide down instead of keeping his knees stiff and falling over. This ability is achieved by the time the average baby is a year old.

4. Motor Development in the Legs

Most people believe that the baby learns to walk quickly. This, however, is not true. Walking really traces its origin to birth or even to early fetal life, when the infant makes kicking movements of an alternate type that closely resemble stepping. As a result of stretching and kicking, the baby learns to coordinate the muscles of his legs and trunk. Later, he develops balance and equilibrium. All of this is essential to walking and cannot be accomplished in a brief space of time.

Methods of Study. In many of the baby biographies, references are made to walking and the preliminary stages leading up to it. Because of lack of control over environmental conditions, little value can be attached to these studies. The earliest scientific investigation of creeping and walking was made by Trettien (1900) in 1900. This investigation, based on data from medical journals and hospital and questionnaire reports, covered 150 babies. More recently, detailed studies of locomotion, using moving-picture records of babies in different stages of development, have been made by Burnside (1927), Shirley (1931*a*), McGraw (1935), and Ames (1937).

In addition to camera studies, records of the babies' footprints have been taken to study the position of the feet in walking. Vierordt (1881) originated a technique for this type of study which involved the use of overshoes with tiny inkwells and pens on the heel and both sides of the ball of the foot. Burnside (1927) had the babies walk over strips of paper after walking over strips of inked muslin. Shirley (1931*a*) greased the soles of the baby's feet with olive oil. After the baby walked across strips of unglazed white paper, its footprints were brushed with powder of lampblack so that they stood out clearly. McGraw (1935) took moving-picture records of babies' feet from underneath glass on which the babies walked.

The Normal Course of Development. Records obtained from carefully controlled experiments have given specific information about the normal cause of locomotor development. Creeping movements, which are "wormlike" and "lizardlike" in character, can be observed in full-term babies during the first four months of life. When prone on his stomach, or lying on his back, the young baby kicks and squirms, often moving his body a few inches. By the end of the second week of life, he can push against a hard surface, such as the end of the crib, with enough force to be able to move himself forward slightly. When held in an upright position, he at first prances and dances; later, as his mus-

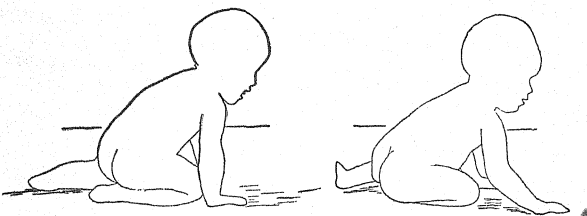

FIG. 36. Hitching. (*From L. H. Burnside, Coordination in the locomotion of infants. Genet. Psychol. Monogr.*, 1927, **2**. *Used by permission.*)

cles strengthen, he plants his feet firmly and makes definite stepping movements.

Rolling and Hitching. The earliest forms of locomotion, to be found in all babies, is *rolling*. In this, the baby moves his body by means of a very crude sort of leg and arm movements. This is usually followed by *hitching*, or locomotion in a sitting position. The baby uses one leg to push himself along and the other is doubled under him or extended, thus helping to maintain his balance. In hitching, movement of the body is aided by the arms and hands, which accompany pushing or slight kicking movements of the legs. The movement in hitching is always backward rather than forward, which is characteristic of crawling, the next stage in the pattern of locomotion. Hitching is generally present by the sixth month. In Fig. 36 are given the characteristic positions of the baby's body in hitching.

Crawling and Creeping. *Crawling* follows hitching in the normal sequence of development. It appears as early as the fourth month and reaches its peak between the seventh and ninth months. In crawling, the body is prone on the ground with the abdomen in contact with the

ground. The head and shoulders are raised by supporting the weight in the upper part of the body on the elbows. The body is pulled along by the use of the arms, while the legs drag or make kicking movements. If only one leg is used to push the body forward, the other is used in an extended position to propel the body. Generally, the leg movements approximate swimming, in that the legs are drawn up to the body and then kicked out suddenly in a froglike manner.

By the age of nine months, the normal baby can *creep*. In this form of locomotion, the trunk is carried free from the floor but parallel to it, and movement comes from the use of the hands and knees. At first, the movements are arhythmic and cross coordination is poor. With practice, rhythm appears and cross coordination is perfected to the point where only one limb moves at a time. As the baby acquires greater strength, he raises his knees from the floor, stiffens his legs, and walks "on all fours."

Ames (1937) studied crawling and creeping in 20 babies by means of moving pictures. Ninety-three per cent of the 14 developmental stages listed below were observed in all the babies. The stages he recorded are

1. One knee and thigh forward beside body—28 weeks.
2. Knee and thigh forward, inner side of foot contacting the floor—28 weeks.
3. Pivoting—29 weeks.
4. Attaining inferior low creep position—30 weeks.
5. Attaining low creep position—32 weeks.
6. Crawling—34 weeks.
7. Attaining high creep position—35 weeks.
8. Retrogression—36 weeks.
9. Rocking—36 weeks.
10. Creep, crawling—36 weeks.
11. Creeping—40 weeks.
12. Creeping, near step with one foot—42 weeks.
13. Creeping, step with one foot—45 weeks.
14. Quadrupedal progression—49 weeks.

These are not fixed, definite stages through which every baby passes. On the contrary, marked individual differences exist. Different babies stress different stages. For example, some babies crawl mostly in a prone position, and others crawl while sitting or hitch. Some babies may even skip a stage or remain in it for a very short time and then pass on to the next stage. In Fig. 37 are illustrated the 14 stages recorded by Ames.

In the early stages of locomotion preceding walking, there is a marked overproduction of movement in the entire body. With practice, coordination results and spreads from the head to the leg region. While the action of the legs remains arhythmic, the arms are flexed and used in alternate fashion. Coordination is imperfect during the crawling stages,

especially in the lower part of the body. By the time the baby is creeping, nearly perfect coordination appears, and a gradual increase in speed of movement is apparent.

Standing. Standing is the next step in the developmental sequence leading up to walking. Normally, standing with support overlaps creep-

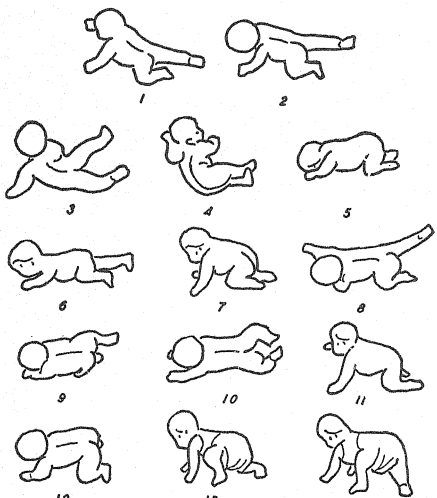

FIG. 37. Summary view of stages one to fourteen. (*From L. B. Ames, The sequential patterning of prone progression in the human infant. Genet. Psychol. Monogr.*, 1937, **19**. *Used by permission.*)

ing and crawling and is a necessary preliminary to walking. (Refer to Table XIII and Fig. 30 for a summary of stages leading up to standing.) Standing with the support of furniture was found by Shirley (1931*a*) to be an easier task than pulling one's self to a standing position. The median age for standing with support for one minute was found to be forty-two weeks. Gradually, the baby lessened the amount of pressure placed upon the object supporting him and finally tried to stand completely without support.

Pulling themselves to a standing position proved to be very difficult

for babies because their legs had a tendency to slide under them. The median age for pulling to a standing position was forty-seven weeks, while standing alone did not appear in the median baby until sixty-two weeks. The ability to pull themselves to a standing position, Peatman and Higgons (1942) found, occurs at a median age of 10.5 months for boys and 10 months for girls. This is approximately the same age as Shirley found and slightly earlier than the average age of 11 months given by Gesell and Thompson (1934).

To maintain his balance, the baby stands at first with his feet far apart, the toes turned out, the knees locked, and the head, as well as the upper part of the trunk, carried forward. This is true, whether the baby stands alone or whether he supports himself by holding on to some object or person. When he falls, he generally falls backward.

Walking. After the baby has gained enough confidence in his ability to stand with support, he cautiously takes a step. Gradually, with practice, his skill increases, and he actually walks while holding on to something for support. This early *walking with support* comes when the baby is acquiring the ability to stand alone.

To predict the age of first *walking alone,* it is a fairly safe rule to apply to double the age of sitting alone. Or, if the baby creeps, the age of walking will be approximately 1½ times the age of creeping. If the baby is precocious in sitting alone, it is safe to predict that he will be precocious in walking. If, on the other hand, he is slow in sitting alone or creeping, he will, other things being equal, be slow in walking alone.

Experimental studies of large groups of babies have shown that the average age at which the baby can stand alone and walk with support is one year. By fourteen months, two-thirds of the babies of that age walk without support, and by the age of eighteen months, the average baby walks like an adult.

Shirley (1931*a*) found that four distinct stages of progress led up to walking. These were: (1) Early period of stepping. Babies whose walking records started before twenty weeks were found to dance, pat their feet, and make three or four swinging, lunging steps while being supported. This lasted for approximately 11 weeks. (2) Period of standing with support. In this period, the baby rests most of his weight on his feet and tenses the muscles of his outstretched arms to help to maintain his balance. The median length of this period was found to be 14 weeks, lasting from twenty-eight to forty-two weeks. (3) Period of walking when led. In this period, the babies walked when led by both hands. Rapid progress in speed of walking, increased uniformity in length of step, increased width of step, and great variability in size of the stepping angle characterized this stage, which appeared at a median age

of forty-two weeks and extended for a median period of length of 22 weeks. (4) Period of walking alone. Rapid increase in speed of walking and length of step, and decrease in width and angle of step characterized this period, which began at ages ranging from fifty to seventy-six weeks. Marked progress appeared up to the ninetieth week.

Not all babies go through all of these stages, as described by Shirley, in learning to walk. Environmental control, height and weight, and many other factors determine which of these stages will appear and the age at which they occur. The order of appearance and the degree of overlapping of the different periods vary with different cases. What is characteristic of all forms of locomotion, in all babies, is that the head is held erect to enable the baby to see where he is going. In walking, the body is erect and motion comes from the use of the legs alone. At first, balance is poor. As an aid to maintaining equilibrium, the baby's arms are held outright, much like those of a tight rope walker, or are pulled up to the body. The feet are turned outward, and the legs are stiff. A rhythmic alternation of the two legs occurs. The head is held slightly forward, and the baby looks straight ahead of him, instead of at the floor. This is necessary if balance is to be maintained, though it usually results in many falls. Falls are caused also by poor general coordination and the fact that the baby raises his feet far from the floor and consequently loses his balance. Figure 38 illustrates the characteristic body posture of the baby in the early stages of walking.

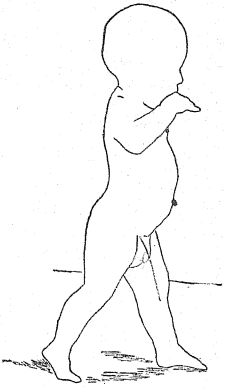

FIG. 38. Walking. (*From L. H Burnside, Coordination in the locomotion of infants. Genet. Psychol. Monogr.*, 1927, **2**. *Used by permission.*)

Foot Positions in Walking. In early walking with support, Shirley (1931*a*) found the length of the step to be short and very erratic. The median length of the step increased with age up to eighteen months, when it ceased increasing and became very regular. Noticeable changes were also apparent in the width of step. In the stepping stage, 5 centimeters between the toes of the two feet, with the heels not touching the floor, was the width of the step. When the stage of walking with aid was reached, a sudden increase in the width of step appeared and continued

throughout the entire period. In walking alone, the width of the step increased steadily until the end of the second year.

In measuring stepping angles, Shirley found that there were great fluctuations during the standing periods and walking with- and without-aid period. With increase in perfection of walking, the walking angles decreased and finally reached zero degrees, when the feet were parallel. Outtoeing is characteristic of the early stages of stepping and walking with or without help.

Analysis of cinema records of baby footprints by McGraw and Weinbach (1936) led them to believe that the type of stepping movement made is a more important index of progress than the number of steps taken. At first, the baby places one foot before he starts to move the other. Later, as his skill in walking improves, he will start to raise the second foot before he has completely placed the first. At six months, the baby contacts the floor only with his toes and the ball of his foot. When he begins to walk, on the other hand, the whole sole of his foot is placed in contact with the floor. With improvement in walking, the contact is heel to toe, as shown in the accompanying pictures (Fig. 39).

In a later study, McGraw and Breeze (1941) reported that two major changes take place with advancing age; (1) the height of the center of gravity of the legs decreases and (2) the path becomes smoother. In terms of energy output, the baby just learning to walk puts forth more effort for the distance covered than he will later. This greater expenditure of energy comes partly from lifting the leg higher and partly from waste motion in the irregular path the leg takes through space. "Efficiency of locomotion," as determined by the ratio between the horizontal distance covered and the length of the path of the center of gravity of the lower leg, is achieved at two or three years of age.

After the gait has become established, the amounts of time each foot spends on the floor and in the air are essentially the same. In faulty or unstable gaits, this does not happen and the gait becomes asymmetrical. In a well-developed child's gait, about 70 per cent of the time in stepping is consumed in the ground stroke of the foot and, during approximately 30 per cent of the time, the leg is moving through space. Stability of gait is usually attained toward the end of the second or the early part of the third year, they found.

Improved Coordination in Walking. When the baby first walks, there is an excess of movement, not in his legs alone, but in his whole body. Gradually this decreases. Coordination of the arms comes before that of the legs, and this helps to maintain a better body balance. With practice, the length of the step increases; the width and variability of the step decrease; the motion of the legs is more rapid and harmonious,

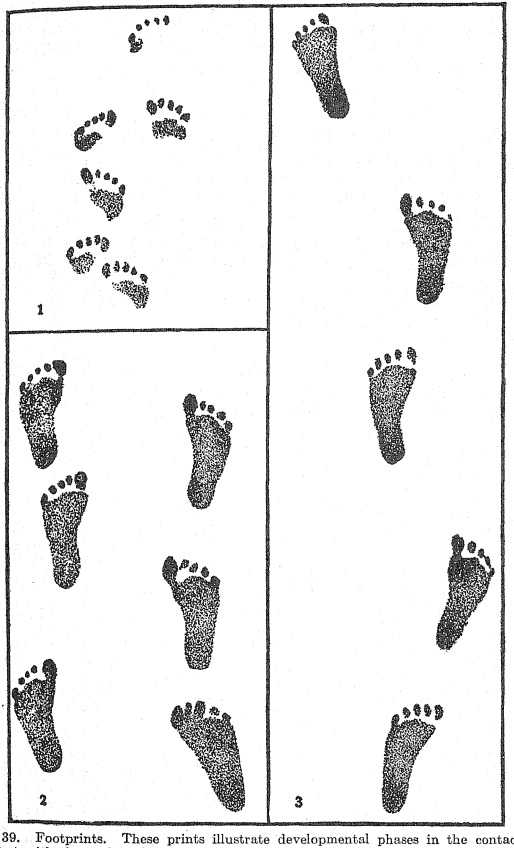

FIG. 39. Footprints. These prints illustrate developmental phases in the contact of the feet with the surface during erect locomotion. 1, Digital progression, narrow base. 2, Plantigrade progression, wide base. 3, Heel-toe progression, normal base. (*From M. B. McGraw, Growth: a study of Johnny and Jimmy. Appleton-Century-Crofts*, 1935. *Used by permission.*)

resulting in a gradual increase in speed of walking; and the steps become straight rather than with toes pointing outward, which is characteristic of early walking. Likewise, the tendency to trot or walk on the toes gives way to a flatter type of stepping movement.

Marked individual variations appear in the style of walking of different children. It requires several years before a characteristic gait is established. Anything, such as too tight or too stiff shoes, an overweight condition of the body, or fear of taking a long, striding step because of repeated falls in the past, will have a marked influence on the permanent style of the individual's gait.

Skills Following Walking. From the age of eighteen months to the beginning of the school age, between the fifth and sixth years, the motor development in the legs consists primarily of the perfection of walking and the acquisition of related skills. *Running, hopping, skipping, jumping, climbing* and other skills soon follow walking.

1. *Running.* Running at first is little more than fast walking with crude, uneven steps and a general clumsiness of the entire body that leads to many falls. By the age of five or six years, the young child can not only run with relatively few falls, but he can play games at the same time. When the young child first starts to run, he does so not because he wants to get to a given place quickly but because he derives satisfaction from the activity itself. Later, as the ability to run is well developed, he reserves this activity for occasions requiring speed.

2. *Jumping.* Jumping is at first an exaggerated stepping with one foot and then the other. Or the child may drop himself from the place of support lifting both feet simultaneously and stepping with both feet at once. The body is not propelled forward, and, as a result, the child generally lands in a sprawl and has trouble in getting up. This is the characteristic method of jumping of the two-year-old. By the age of four, the child can jump well. He now propels his body upward and forward, bends his knees, swings from a higher to lower level, and lands in a standing position.

At the age of three years, 42 per cent of the children studied by Gutteridge (1939) jumped well and, by five years, 81 per cent were skillful jumpers. Jumping from a higher to a lower level occurs from the age of two years on. Jumping over an obstacle proved to be difficult even for the four-year-olds in Gutteridge's group. A long jump, she reported, is attempted from five years on.

Skipping and *hopping* are modifications of the jump movement. Thirty-three per cent of Gutteridge's subjects were proficient hoppers when they were four years old. At five years six months, 97 per cent could hop well, and at six years six months, 90 per cent were skillful. The earliest

attempts at hopping were irregular series of jumps across the floor, which later became more regular and precise. Hopping on two feet preceded hopping on one foot. Some children were found to hop more easily on the left foot than on the right, or vice versa. After achieving skillful hopping, the child added variations by hopping backward or by turning around while hopping.

Skipping is more difficult for children than is hopping. At the age of four years, only 14 per cent of Gutteridge's group were rated as being able to skip. One year later, 72 per cent could skip and, at six, 91 per cent could. In learning to skip, the child first introduces a hop or a jump into his running. Then he skips with one foot, using a running step with the other. Later he skips with both feet and, as he becomes proficient, he introduces variations, such as crossing his feet, twirling, or skipping sideways.

Galloping, another modification of jumping, develops later than skipping. At four years of age, 43 per cent of Gutteridge's subjects were learning to gallop and, at five years, 78 per cent could gallop. Not until a year and a half later were 92 per cent of the children skillful in their galloping. Children first introduce a galloping step into their running or pound on the strong beat of music. Later, they learn the basic movement of galloping, which is to throw the weight on the forward foot. After skill in galloping is achieved, many variations are introduced, such as galloping sideways or backward and adding gestures or vocalizations while in motion.

3. *Climbing.* Climbing steps is accomplished by crawling and creeping. This occurs before the baby can walk alone. In going down steps, the baby generally goes backward. After he can walk alone, the baby goes up and down stairs in an upright position, holding on to the railing of the stairs or the hand of a person. At first, one foot is placed on the step and the other drawn up to it. The same foot is used each time to make the advance. A similar method is used for going downstairs. Gradually, with practice, the child lets go of the railing and uses his legs alternately, as if walking. This adult manner of step climbing is attained by four years of age, provided the child has had ample opportunity to learn.

Climbing an experimental staircase which is better suited to the size of a child than typical household staircases, meant primarily for adult use, is easier and the ability occurs earlier. Gesell and Thompson (1934) report that climbing behavior occurs between forty and fifty-six weeks. At fifty-six weeks, 53 per cent of the babies they observed could surmount the 4 treads of the experimental staircase.

In order to determine the pattern of behavior in stair climbing, Ames

(1939) made cinema records of 12 babies, fifty-two weeks to two or three years of age. She reported that stair climbing is definitely patterned behavior, almost identical with that commonly observed in creeping. Typically, the left foot moves first, then the left hand and the right foot almost simultaneously; then, after a short pause, right hand and left foot. The contralateral limbs move simultaneously, as in prone progression.

In stair climbing, the pattern is closely similar to that used for progression on level surfaces. A child who creeps on hands and knees, for example, climbs stairs on hands and knees; while the child who creeps on hands, knee, and one foot, climbs stairs in that fashion. Ames reported that patterned ascent of stairs appeared at a mean age of sixty-two weeks and patterned descent, a few days later.

Climbing, Gutteridge (1939) reported, was well established for half the children she studied by the time they were three years old. By six years, 92 per cent were proficent in climbing ability. At every age level, there was a wide range of abilities in individual children. Boys' climbing ability slightly exceeded that of girls at ages two, three, and six. At the ages of four and five years, however, the climbing abilities of boys and girls were equal. Children soon exhaust the possibilities of the climbing equipment ordinarily provided for them, Gutteridge noted. When they have gained sufficient skill to climb well, they start to do stunts, such as racing, competing, and climbing in dramatic projects.

Ladder climbing has been studied by McCaskill and Wellman (1938). According to them, a child can descend a large ladder, marking time and with caution, at the age of twenty-four months. At thirty-three months, he will ascend, marking time and with facility. One month later, he can ascend a small ladder with alternate feet and with caution; at thirty-eight months, with facility. At the same age, he can descend a large ladder with facility, marking time. At the age of forty-five months, the child will ascend a large ladder with alternate feet and with caution. By the age of sixty-two months, he can descend a large ladder with facility.

4. *Swimming.* How soon a child will acquire swimming skills will depend to a large extent upon the opportunities he has to learn to swim. McGraw (1939*a*) studied the behavior of 42 babies, ranging in age from eleven days to 2½ years, when submerged in water in a prone position. Three developmental phases in swimming were observed:

a. The few-weeks-old baby engages in rhythmical, coordinated reflex movements of the upper and lower extremities resembling swimming. He has a reflex which inhibits respiration when submerged.

b. At the age of several months, disorganized, struggling movements appear and there is a tendency to rotate from a prone to a supine position, with difficulty in respiratory control.

c. Toward the end of the second year, there are deliberate swimming movements, especially in the lower extremities, and a tendency to remain in a prone position.

Few children, however, acquire the ability to swim much before the age of four years and many not until several years later. Because swimming is such a highly coordinated type of skill, it requires more practice than many of the other skills of childhood. Unless the child's environment offers opportunities for the necessary practice, the skill is retarded in its development.

5. *Tricycling.* By the age of two years, 17 per cent of Gutteridge's (1939) subjects could ride a tricycle well; at three years, 63 per cent were

FIG. 40. The young child can ride a tricycle without difficulty. (*Clapp's Baby Foods.*)

proficient, and at four years, 100 per cent were successful. "Stunting" and the use of the tricycle for all sorts of variations frequently was found to accompany skilled performance. These included riding backward, turning corners, and avoiding obstacles.

6. *Other Skills.* Some of the other skills that children acquire have been listed by Strang (1938). Between the ages of five and six years, children can jump rope; can balance on rails, on top of a wall, on a narrow plank elevated at one end, or on a tape or chalk mark on the floor; and can roller-skate on four wheels, but cannot ice-skate if the skates have a single runner.

At the age of five years, a child may ignore a bicycle but will ride it one year later. He can, at that age, keep time to music by walking and skipping. During the first 3 years of school, the child can dance imagina-

tive rhythms to music, can skip to music, skate on a single runner, and ride a bicycle.)

Norms. Studies of groups of babies and young children have shown when, in the average child, one can expect certain motor skills following walking. Bayley (1935) has devised a series of motor-development tests, the "California infant scale of *motor development,*" made up of tests from several scales. In the table below are listed a number of motor performances, following walking, with the age placement for each.

TABLE XIX. LOCOMOTOR SKILLS FOLLOWING WALKING

Motor Performances	Age Placement, Months
Walks sideways	16.5
Walks backward	16.9
Stands on right foot with help	19.9
Stands on left foot with help	19.9
Walks upstairs with help	20.3
Walks downstairs with help	20.5
Walks upstairs alone; marks time	24.3
Walks downstairs alone; marks time	24.5
Stands on left foot alone	29.2
Stands on right foot alone	29.3
Walks on tiptoe	30.1
Walks on line; general direction	31.3
Walks upstairs, alternating forward foot	35.5
Jumps from height of 30 centimeters	37.1
Distance jump 10 to 35 centimeters	37.3
Distance jump 60 to 85 centimeters	48.4
Walks downstairs—alternating forward foot	50.0

Source: BAYLEY, N. The development of motor abilities during the first three years. *Monogr. Soc. Res. Child Develpm.*, 1935, 1. Condensed from table on p. 3. Used by permission.

LATER IMPROVEMENTS

By the end of the second year, the child's sensorimotor equipment is complete in its general form. After that, development consists primarily of increase in strength and facility of performance. No distinctly different types of muscular activities appear after early childhood. New forms of skilled performance represent utilization of already present skills, in new forms. There is a perfecting of old skills, resulting in better coordination, fewer errors, smoother movements, and more graceful, rhythmic activities. From the fifth or sixth year, increased speed, accuracy, and steadiness in the use of the muscles enable the child to be more independent of others. Up to the beginning of adolescence, because children enjoy all types of play which involve skills, such as skating, bicycling, swimming, and ball games, there is rapid improvement in all forms of complex activities.

Individual Differences. The repertoire of skills acquired after the basic motor coordinations have been attained varies from one child to another. What skills the child will acquire depends to a large extent upon his environment and his opportunity to learn. Children in the rural districts, for example, acquire more skills in climbing than do children in urban communities where opportunities for climbing are distinctly limited.

Motor achievements of five-, six-, and seven-year-olds, as measured by motor-achievement tests, led Jenkins (1930) to the conclusion that marked sex differences exist. In the 35-yard dash, boys at each age level were superior to girls of the same age, while girls proved to be superior to boys in the 50-foot hop. In the basket-ball throw for distance and the socker kick for distance, boys were definitely superior to girls. Boys proved to be superior to girls in the standing and the running broad jump. In summary, Jenkins concluded that, in the events tested, the boys were superior on the whole in all except the 50-foot hop, and that this superiority ranged from slight to significant.

Because of the wide variety of skills that different children acquire, and because of the practical difficulty of observing older children, who, for the most part, resent adult supervision in their play, the skills of older children have not been studied as extensively as the basic ones. Most of the observations have been limited to activities involving the hand and arm, though what holds true for those parts of the body is merely a general indication of motor coordination throughout the entire body.

Speed. Speed of movement has received scanty attention in the research studies of babies. Ames (1940), however, reports that among the babies she studied the characteristic tempo of movement did not change markedly as a result of practice. Babies who crept slowly, for example, were found to climb and prehend slowly.

Studies of speed by Johnson (1928), Goodenough and Tinker (1930), Gates and Scott (1931), Stutsman (1926), Moore (1937), and others, in situations involving tapping, putting marbles through a round slot in a box, buttoning two pieces of cloth, or putting pegs in holes in a board, have shown that speed increases at a fairly uniform rate throughout childhood. Increase in speed thus proved to be a function of age. This increase continues until the sixteenth or eighteenth year, but at a slower rate after the thirteenth or fourteenth year. At all ages, boys were found to exceed girls.

Accuracy and Steadiness. Studies of *accuracy* in tracing and aiming experiments by Johnson (1928), Wellman (1926), and Rice (1931) in situations involving muscle control in drawing straight lines, drawing a

diamond from a model, or aiming at a target, have shown a gain in accuracy up to the ages of thirteen to fourteen years. After that time, the improvement observed is small. *Steadiness*, as measured by how little involuntary movement occurs when the finger, hand, arm, or whole body is held as nearly motionless as possible, improves with age. The rate of increase, however, and the cessation of development are unknown, as no retest studies, after a period of time, have been made.

DELAYED MOTOR DEVELOPMENT

Not all children progress through the stages of motor development recorded above at the average or normal ages. There are many instances of accelerated development and even more of retarded development. In most cases, where motor development is retarded to an appreciable extent, the delay becomes apparent early. Should remedial treatment be given as soon as the delay is recognized, it could, in most instances, be eliminated or certainly minimized to a marked extent.

Seriousness of Delayed Motor Development. Delayed motor development is serious, not only because it keeps the child from reaching the stage of independent action when he normally should, but primarily because it interferes with the social development of the child. The little child who is low in developing control over his body finds himself unable, as he reaches the second or third year, to keep up with other children of that age. His movements are clumsy, awkward, and uncoordinated, with the result that he cannot join in the play activities of the group. If he is backward in feeding himself, dressing himself, or taking care of his own needs, he feels self-conscious and shy when in the presence of other children whose independent action enables them to take care of themselves without the aid of parent, nurse, or teacher. As a result of this early backwardness in the development of motor control, many young children develop feelings of inferiority which cause them to withdraw from the social group, and this lays the foundation for unsocial attitudes and behavior.

Causes of Delayed Motor Development. A few of the most common causes of delayed motor development are these:

1. *Illness.* Popular opinion holds that the relationship between the physical condition of the child and his motor development is a close one. This would mean that, at a given age, the children who are in the best physical condition would be more precocious in their motor development than children of the same age who are in poor physical condition owing to illness, malnutrition, or other causes.

How illness of a severe nature, such as pneumonia, rickets, and diphtheria, or any major operation occurring during the first two years of life affects the motor development of children has been studied by Smith

(1931). His data, based on parents' testimony concerning the age at which their children developed certain motor traits, is presented below.

TABLE XX. HOW ILLNESS INFLUENCES MOTOR DEVELOPMENT

Trait	Mean age, months	Number
Head up:		
Control	2.400	513
Sick	2.460	81
Sitting up:		
Control	5.341	619
Sick	5.778	81
Creeping:		
Control	8.440	583
Sick	9.372	81
Walking:		
Control	12.772	831
Sick	14.403	81

Source: SMITH, S. Influence of illness during the first two years on infant development. *J. genet. Psychol.*, 1931, **39**. Condensed from table on p. 285. Used by permission.

His conclusion, based on the above presented data, was that "severe illness preceding the development of any trait reduces the apparent rate of development of that trait to about 88 per cent of what it would otherwise have been."

A study of the effects of rickets has been made by Gesell (1928) in the case of rachitic and nonrachitic babies at twelve, eighteen, and twenty-four months of age. In the accompanying table are given the percentages of babies of the rachitic (*R*) and nonrachitic (*N*) groups who had attained the necessary motor development to walk at a given age. These data suggest that rickets, during babyhood, may be regarded as a cause of delayed motor development.

TABLE XXI. INFLUENCE OF RICKETS ON MOTOR DEVELOPMENT

	12 months		18 months		24 months	
	N, %	*R*, %	*N*, %	*R*, %	*N*, %	*R*, %
Walks with help of chair	66.67	41.67	98.67	93.33	100	90.91
Walks alone, fair balance	14.81	8.33	96.00	83.33	98.00	81.82
Walks around house; seldom falls	7.41	0.00	57.33	20.00	96.00	50.00

Source: GESELL, A. *Infancy and human growth.* New York: Macmillan, 1928. Condensed from table on p. 270. Used by permission.

2. *Nutrition.* It is generally assumed by doctors that undernourished babies are slow in developing muscle coordination owing primarily to muscular weakness and the slow rate of hardening of the muscles. Few experimental studies, however, have been made to determine how marked an influence this factor exerts. The effect of nutrition on the age of walking has been studied by Variot and Gotcu (1927) and the results summarized in the following table:

TABLE XXII. INFLUENCE OF FEEDING ON AGE OF WALKING

Nutrition	Age of walking alone, months	Per cent of 500 cases
Breast feeding only	11 to 14	82.0
Breast and bottle mixed	11 to 14	68.58
Bottle only	11 to 14	61.45

Source: VARIOT, G., AND GOTCU, P. Le Début de la marche bipède chez le jeune enfant dans ses rapports avec l'age et la taille. *Bull. et Mém. de la Soc. d'anthrop. de Paris*, 1927, **8**, 17–23.

3. *Size of the Body.* The size and body proportions of the baby exert some influence on his motor development, especially in the case of sitting, standing, walking and later skills. The center of gravity of the baby's body must shift downward if the baby's balance is to be maintained. There must be an increase in the ratio of leg to trunk length and a decrease in the ratio of weight to height if proper balance is to be achieved. The size of the baby was found by Shirley (1931*a*) to have some influence on the age of first walking. Small-boned, thin, and muscular babies were found, in general, to walk sooner than short, rotund, or exceedingly heavy babies.

Strang (1938) maintains that there is some evidence to show that the "roly-poly, heavy baby walks later than the slender-built child," though she adds that "body build has not been shown to be closely related to motor abilities." Norval (1947) found that for babies of the same weight, an increase of 1 inch in length at birth was associated with a mean decrease of 22 days in mean walking age. For newborns of the same length, an increase of 1 pound was associated with a mean increase of 8 days in age of walking alone.

Peatman and Higgons (1942), in an analysis of the sitting, standing, and walking ages of 349 babies in relationship to height and weight measurements, concluded that "generally the real reasons for the age differences that exist in the beginnings of sitting, standing, and walking of infants are to be found in internal conditions, external circumstances having little or nothing to do with differences in weight or body build."

They maintain further that, once the muscular and skeletal equipment

for sitting, standing, and walking have been developed, the future course of the child's locomotor behavior will be characterized by variations in time typical of differences in the learning process. These differences they attribute to temperament, motor alertness, and responsiveness to the relationship of internal needs and external circumstances. They conclude their study with the statement, "it appears most unlikely that excessive weight provides us with a significant clue to any of these conditions."

How body size affects the motor development of children in the preschool and school ages has likewise been investigated. Bayley (1940) reported that children who were either extremely stocky or extremely thin made scores below the average in tests which demanded agility. Other than that, there was no evidence of the relationship between physical characteristics and motor-ability scores. She concluded by saying, "a child's build is of little importance in determining his muscular coordination."

Seventy-two per cent of the 140 obese children studied by Bruch (1940) were physically inactive. A similar percentage showed a striking delay in their ability and willingness to take care of themselves.

4. *Hampering Clothing.* The present fashions in clothing for young children permit freedom of movement that was formerly not possible when little children were so completely enveloped in clothing that their every move was restricted. The less clothing the little child has, the easier it is for him to exercise his muscles and, as a result, the sooner he will gain control over them. This is especially true of shoes, which, if stiff, hamper the use of the feet and thus delay walking. As the baby maintains his balance and walks first by digging his toes into the surface on which he walks, his feet must be restricted as little as possible by his shoes.

What effect, if any, clothing has on the grasping response of babies under six months of age has been investigated by Halverson (1942). The babies were tested successively in clothed, nude, and reclothed situations, to determine the effect of clothing on muscular tonus. Halverson reported that the change from the clothed to the nude situation resulted in a state of increased tonus; from the nude to the reclothed, in a condition of reduced tonus.

This trend was shown by more than two-thirds of the babies. More than 75 per cent of the babies showed a stronger grip in the nude than in the clothed situation, and an equal number gripped with greater force in the nude than in the reclothed situation. The difference in the strength of the reflex between the nude and the clothed situations is due, in part, Halverson explained, to changes in skin temperature.

A study made by Smith *et al.* (1930) of two comparable groups of

babies, one living in Hawaii and the other in Iowa, showed that the babies of the former group walked approximately six weeks earlier than those of the latter group. The suggestions made by Smith to explain this difference were that, in the warmer climates, babies are exposed more to the growth-stimulating ultraviolet rays of the sun and are less hampered by clothing, with the result that they have a better opportunity to acquire the ability to walk.

5. *Lack of Opportunity to Develop Muscle Control.* In many instances, motor development is delayed because of lack of opportunity for practice. The little child whose environment is restricted to crib, coach, or play pen, or who, if given a wider environment, finds the floors so slippery that he falls and that everything he leans on for support slides under his weight, is hampered in developing muscle control. The environment of an adult is, in almost every respect, unsuited to the needs of a young baby and thus offers little opportunity for him to get the practice needed for the acquisition of motor control.

A study of the effect of cradling practices upon the onset of walking in Hopi children was made by Dennis and Dennis (1940, 1940*a*). Two Hopi villages in Arizona have given up the use of the cradle, though their other child-rearing practices remain much the same as is found in Hopi villages where cradling is still used. Among the Hopis who use cradles, the practice is to bind the infant to a board on the first day of life. For the first three months, the baby spends nearly all his time in this position. As he grows older, the number of hours a day he spends on the board gradually decreases. While on the board, the baby has no opportunity for random movements. Only when taken off the board and placed on the floor or a person's lap can he practice the coordinations which may lead to walking.

Dennis and Dennis found, when comparing the two groups of Hopis, that the average age of onset of walking differed by only seven-hundredths of a month. The average age for those who used the cradling board was slightly less than those who did not. There is, thus, they maintained, no evidence of an effect of the cradling board upon walking. Movement of the baby can be markedly restrained without having an influence upon walking.

In a study of the motor skills of young children, Jones (1939) found that in the locomotor activities "the opportunity to have experience with materials appears to be the most important extrinsic factor influencing progress in the development of skill." A similar point of view is expressed by Gutteridge (1939), who stated that "there is ample evidence in this study that children show motor control and proficiency far in advance of the common belief and tradition, at least as represented by the equip-

ment customarily provided for children of those ages. . . . It is suggested that new avenues of motor opportunity be open to children by the inclusion of a wider range of activities not hitherto made possible on the usual playground."

6. *Lack of Incentive to Develop Muscle Control.* Even if the young child is given an environment suited to his needs, he may be slow in developing muscle control because of lack of incentive to do so. If he is pampered, and waited on, and if his every wish is satisfied, it is not surprising that he becomes lazy. This, in turn, interferes with the development of muscle control, because of the lack of effort put forth by the child to acquire it. In walking, dressing, and self-feeding, this is especially true.

Will running on all fours prove to be efficient enough so that the baby will have no incentive to walk? This is a question Dennis (1934*a*) tried to answer. He found no evidence to support the claim made by Hrdlicka (1931) to the effect that the habit of running on all fours delays the onset of walking. In a study of obese children, Bruch (1940) found a marked apprehension on the part of their parents concerning the dangers of physical exercise. This frequently paralleled the child's inactivity. Only a few of the parents of the obese children she studied had encouraged activity on the part of their children.

Gesell and Lord (1927), in a study of nursery-school children of low and high economic status, found that in verbal, practical, and emotional abilities, the children from the more favored environments ranked above those from the poorer environments. In self-care, on the other hand, the children whose homes were in the tenement districts surpassed those from the better districts in such skills as washing the face and hands, combing the hair, and lacing and tying shoes. Their interpretation of this difference was that self-care depends largely upon motivation. The children from poorer homes had a greater environmental stimulus than did the children from better homes.

7. *Too Little Opportunity to Learn.* What to an adult is a simple act is, to a child, a complex one. Buttoning a suit, tying a shoe, and even carrying food to the mouth with a spoon are complex enough to necessitate much practice on the child's part before the acts are mastered successfully. If the child is not given plenty of opportunity to master these skills, or if he is rushed while attempting to master them, thereby creating a state of nervous tension which militates against muscle control, he is apt to be retarded in acquiring the skills.

8. *Emphasis on Specific Movements.* Teaching specific movements before the gross movements are perfected very often delays the acquisition of skilled movements. For example, in dancing or writing, the

child is expected to coordinate the smaller muscle teams before coordinating the larger ones. Because this is too complicated a task for him, it will not only discourage him but also delay the acquisition of the desired skills. The young child should, for example, be given plenty of opportunity for scribbling freely and without restraint before he is expected to perform the more complicated movements involved in drawing or writing. Similarly, a chance to practice stringing beads or buttons should precede any attempt to teach the little girl to sew.

9. *Low-grade Intelligence.* The relationship between intelligence and motor development, especially during the first years of life, is so marked that motor items figure largely in tests of general intelligence for children under two years of age. Babies who are slow in sitting up, standing up, or walking, generally prove, as time goes on, to be backward in intellectual development. On the other hand, those who are precocious in motor development prove to be, for the most part, intellectually precocious.

How intelligence affects the age at which babies begin to walk has been studied by Mead (1913). Fifty "normal" children were compared with 144 "schoolable" defectives from the Indiana School for Feeble-minded Youth. The average normal child was found to begin to walk at the age of 13.88 months, while the feebleminded children did not, on the average, achieve this skill until the age of 25.08. Terman (1925) found that gifted children walked about a month earlier than Mead's "normal" children. Abt, Adler, and Bartelme (1929) report a correlation of .37 for girls and .36 for boys between the age of walking and intelligence.

10. *Fear.* Forcing a child to carry out a skilled movement before his muscles and nervous system are ready for it invariably results in delayed motor control. Fear which comes from falling often causes an inhibition that makes the child hesitant to repeat the act associated with failure. When the little child is forced to walk before he is ready to do so, to climb stairs when he is not sure of himself walking on a straight floor, or to dive before he can swim with ease and confidence, fear is the usual outcome, and this militates against further attempts to develop the skill. The result is a delayed development of the activity.

NORMS OF MOTOR DEVELOPMENT

In order to give parents, physicians, and educators definite standards of the motor development of the baby at different ages to enable them to determine whether or not the baby is progressing normally, several "inventories" or "norms" have been prepared. Today, they are widely used. One of the best known is the Gesell (1928) "normative sum-

maries," based on the study of 50 normal babies at each level investigated. A sample of Gesell's developmental schedule is as follows:

GESELL'S NORMATIVE SUMMARIES FOR MOTOR DEVELOPMENT

One-month level.

1. Lifts head from time to time when held to the shoulder.
2. Makes crawling movements when laid prone on flat surface.
3. Lifts head intermittently, though unsteadily, when in this prone position.
4. Turns head laterally when in prone position.

Six-month level.

1. Sits momentarily without support, if placed in a favorable leaning position.
2. Grasps with simultaneous flexion of fingers.
3. Retains transient hold of two cubes, one in either hand.

Twelve-month level.

1. Walks with help.
2. Lowers self from standing to sitting position.
3. Holds crayon adaptively to make stroke.

Eighteen-month level.

1. Climbs stairs or chair.
2. Throws ball into box.
3. Scribbles spontaneously and vigorously.

Thirty-month level.

1. Goes up and down stairs alone.
2. Piles seven or eight blocks with coordination.
3. Tries to stand on one foot.
4. Copies vertical or horizontal line.

(Abbreviated from pp. 128–135. Used by permission.)

Kuhlmann (1922), in his revision of the Binet-Simon test, has given the following standards of motor development for tests of intelligence:

Age 3 *months.*

1. Carrying hand or object to mouth at will, not merely through random, chance movement.
2. Binocular coordination, when object is moved from right to left, and up and down in front of the baby's face (vertical and horizontal).
3. Turning eyes to object in marginal field of vision.
4. Voluntary wink at an object threatening the eyes.

Age 12 *months.*

1. Sitting without support for 2 to 3 minutes and standing unsupported for 5 seconds or more.
2. Imitation of such movements as shaking a rattle, nodding the head, shaking the head, or pursing the lips.
3. Marking with a pencil on a piece of paper.

Age 18 *months.*

1. Drinking from a glass.
2. Feeding with spoon or fork.

Age 2 *years.*

1. Imitation of simple movements as raising both arms or clapping hands.
2. Copying circle.

(Used by permission)

Bayley's (1935) scale of fundamental motor coordinations, with the age placement in months for each item, includes the following activities:

TABLE XXIII. FUNDAMENTAL MOTOR COORDINATIONS

Fundamental Motor Coordinations	Age Placement, Months
Lifts head at shoulder	0.5
Head erect—vertical	1.9
Head erect and steady	2.9
Turns from side to back	3.4
Prone—elevates self by arms	3.5
Sits with support	3.5
Holds head steady	3.6
Beginning of thumb opposition	4.1
Sits with slight support	4.6
Turns from back to side	5.0
Partial thumb opposition	5.1
Effort to sit	5.4
Head balanced	5.5
Simultaneous flexion and thumb opposition	5.7
Sits alone momentarily	5.7
Pulls to sitting position	6.2
Sits alone 30″ or more	6.2
Rolls from back to stomach	7.0
Complete thumb opposition	7.6
Sits alone, steadily	7.5
Sits alone with good coordination	8.5
Raises self to sitting position	9.4
Early stepping movements	9.6
Pulls to standing position	10.5
Stands up	10.6
Walks with help	11.6
Sits down	12.5
Stands alone	12.5
Walks alone	13.0

Source: BAYLEY, N. The development of motor abilities during the first three years. *Monogr. Soc. Res. Child Develpm.*, 1935, 1. Condensed from table on p. 3. Used by permission.

An interesting comparison might be made if the age placements, given above, were compared with the stages of motor development, as outlined by Shirley in Table XIII, and with Fig. 30, in which McGraw has shown graphically the developmental phases in the assumption of an erect posture.

CHAPTER VII

DEVELOPMENT OF SPEECH

The study of the first sounds uttered by a baby, and their subsequent development into a vocabulary large enough to enable the child to be understood by others or to communicate with them, is one of the most interesting aspects of the child's development. Because it involves so many complicated activities, speech is a skill which develops at a slower rate than the motor skills described in the preceding chapter.

Speech vs. Language. "Language" refers to *every* means of communication in which thought and feelings are symbolized so as to convey meaning, including such widely differing forms of communication as written, spoken, sign, facial, gesture, pantomime, and art. "Speech," on the other hand, is merely one form of language in which articulate sounds or words are used to convey thoughts. The capacity for speech is essentially human.

All sounds made by the human being may not justifiably be classed as "speech." Vocalization, in the form of cries or explosive sounds, does not become speech until meaning is associated with the sounds made. Every form of vocalization, which occurs up to the time that the young child associates meaning with the sounds he uses, belongs to the prespeech level of development. When true speech begins is an individual matter and varies from one child to another. It is often difficult to determine whether the child is really speaking or if the words he utters are merely "parrot talk," in that he does not know their significations but imitates blindly the sounds heard.

Criteria of Speech. Two criteria should be applied to determine whether the young child has emerged from the use of prespeech forms of communication. These two criteria are: 1. The child must pronounce his words so that they are readily understandable to others rather than comprehensible only to those who, because of constant contact with him, have learned to understand him. 2. The child must know the meaning of the words he uses and must associate them with the objects they represent. "Da-da," for example, must be used only to refer to one person, or "ball," to refer only to balls and not to toys in general. "Baby talk" may satisfy the second criterion of real speech, since words are identified with objects, but it does not satisfy the first criterion of comprehensibility.

INCENTIVES TO SPEAK

The young child learns to speak according to his needs. If he can get what he wants without bothering to ask for it, he does not put forth the effort needed to learn so complicated and difficult a task as speaking. When substitutes for speech, such as crying or gestures, serve his purpose adequately, and when he discovers that he can get what he wants by using them, his incentive to learn to speak is weakened. This leads to delayed speech in babyhood and to a limited vocabulary in the childhood or adolescent years.

The child learns to use the words he needs. In the section of the chapter relating to the building up of a vocabulary, it will become apparent that the child not only learns first the words for which he has the greatest need but also that he uses substitutes, such as slang terms, when he wishes to express an idea but lacks adequate words to convey his meaning.

The prime "needs" of the young child which act as incentives to his learning to talk are: (1) the desire to secure information regarding his environment, and later about himself or his friends, the need for which is readily apparent by the age of 2½ to three years; (2) to give commands or express wants, like "want to go 'bye-bye'" or "give baby ball"; (3) to bring the child into social relationships with others; and (4) to express his thoughts and ideas.

METHODS OF STUDYING SPEECH DEVELOPMENT

All baby biographies record in more or less detail the first words used by the babies studied. They likewise give information about the size of the vocabulary that the babies use from time to time, the parts of speech employed, and the correctness of pronunciation. Because baby biographies are, for the most part, records of children of high-grade intelligence, data thus obtained are of little value in determining norms of speech development for children as a whole.

A survey of the studies of speech sounds produced by babies during the first six months of life has been made by Irwin (1941*a*). An analysis of these data led him to conclude that they are usually based on the observations of one or two individual babies. Furthermore, they lack, for the most part, the systematic methodology of research found in many of the other studies of speech.

Scientific Methods. Recently, studies based on groups of children of different ages, of known intellectual levels, and from controlled environmental conditions, have been made. The data thus obtained have a degree of accuracy not found in the earlier studies. The scientific

methods of investigation take three forms: *observational studies, tests,* and *experiments.* Observations are sometimes made on single children continuously over a period of time or at periodic intervals and sometimes on large numbers of children by their mothers or by psychologists in connection with psychological examinations. McCarthy (1930), for example, recorded for each child a sample of 50 consecutive responses under uniform conditions, when the child was alone in a room with an adult observer and provided with toys and picture books. At no time was direct verbal stimulation used. Intelligence tests, in almost every case, include measures of the size and type of vocabulary present at a given age, as well as the degree of comprehension attained. Direct experiments on speech development are limited for the most part to children of older ages.

Speech development of children is difficult to study for two reasons. (1) It is hard to record accurately the verbal responses made, especially when pronunciations deviate from the accepted standard. Babbling and "baby talk" vary from child to child, and an accurate recording of the exact sounds produced is almost impossible. (2) It is difficult and sometimes impossible to stimulate talking at will. Many times, young children refuse to talk in the presence of a stranger. The result is that the psychologist is often forced to rely upon information from parents or others, which varies in accuracy according to the care with which the information has been obtained. For example, in recording the first word used or the size of the vocabulary of the child at a given age, does the parent use the two criteria of speech, that it must be pronounced in an understandable way and that the child must know the meaning of the word he uses?

PATTERN OF SPEECH DEVELOPMENT

Learning to speak is a difficult task. There is no single speech organ ready for use at birth or even shortly afterward. Speech is produced by the coordinated activity of the lip, tongue, and throat muscles, as well as by the larynx and lungs. It takes time and practice on the part of the young child to perfect the coordination of these organs.

Speech development follows a pattern much the same for all children. While it is true that some children learn to talk more quickly than others, this acceleration is an accompaniment of rapid development along other lines, notably muscle coordination. What deviations from a characteristic pattern exist are, for the most part, trivial and the product of different environmental conditions than those commonly found.

Technique. The technique of learning to speak is that of the "conditioned response." If a word is said by another when an object is given

to the baby, the baby learns that that particular combination of sounds stands for the object presented. The more often the baby or young child sees an object when the name of that object is given, the more quickly he will emerge from the "parrot" stage, in which he merely imitates words

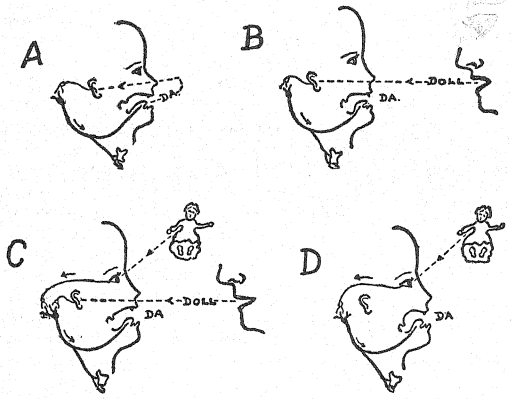

FIG. 41. Development of language habits in the young child. (*From F. H. Allport. Social psychology. Houghton Mifflin*, 1924. *Used by permission.*)

A, Stage 1; random articulation of syllables with fixation of circular responses. Chance articulation of the syllable *da* causes the baby to hear himself say it. The auditory impulse is conveyed to the brain centers where it discharges into the efferent neurons to muscle groups used in pronouncing the same syllable. An ear-vocal habit for *da* is thus established. *B*, Stage 2; evoking of the same articulate elements by the speech sounds of others. An adult speaking the word "doll," which is closely similar to *da*, causes the auditory excitation again to discharge into the response *da*. *C* and *D*, Stage 3; conditioning of the articulate elements (evoked by others) by objects. In *C* the process shown in *B* is repeated. A doll shown at the same time stimulates the baby's eye, and forms a visual connection with the motor neurons being used in pronouncing the syllable. There is thus established a conditioned response between the sight of the doll and the speaking of *da*. The sight of the doll alone (*D*) is now sufficient to evoke its name (*da* being as close as the baby can come to the pronunciation of "doll").

he has heard, and progress into a phase of language development that may justifiably be called "true speech." In Fig. 41 the way the young child learns to speak is well illustrated.

How important a role training plays in learning to speak has been investigated by experiments designed to test the relative effectiveness of learning and maturation. Using the co-twin control method, Strayer (1930) took a pair of identical twins who, at the age of eighty-four weeks, were near the threshold of language acquisition. The trained twin,

Twin *T*, was given an intensive vocabulary training for 5 weeks, beginning at the age of eighty-four weeks and lasting through the eighty-eighth week. The control twin, Twin *C*, was given 4 weeks of training, beginning at the age of eighty-nine weeks and extending through the ninety-second week.

The maturational difference of 5 weeks was found to have a definite influence on the relative effectiveness of training. Not only did the training of Twin *C*, begun 5 weeks later than that of Twin *T*, prove to be more effective, but the responses made were more mature. Twin *C*, after 4 weeks of training, had seven more words in her vocabulary than had Twin *T* after an equal amount of training. Twin *T*'s pronunciation at the end of the experiment was better than that of Twin *C*, owing, in all probability, to a longer practice period in the case of the former.

Beginnings of Imitation. How soon a baby is capable of imitating the sounds he hears is a question which has been subjected to experimental analysis a number of times. Bühler (1930) observed some elemental imitation of sounds such as "re-re-re" as early as six months of age, and of syllables as "mama," "papa," and "dada" at eleven months of age. Cattell (1940) gives imitation of words as a test item at 9 months; Gesell (1928), at 10 months; and Bayley (1940), at 11.7 months. Shirley (1933) maintains that there is a marked tendency on the part of the baby to imitate the intonations and inflections of the voice, regardless of the specific sounds.

Significance of Good Model. As the child imitates the speech of those about him, whether it be good or bad, it is essential that he have a good model to copy. The child imitates defective speech, such as poor pronunciation and grammatical errors, as readily as he imitates correct speech. If parents use "baby talk"—for example, "choo-choo" for "train" and "tick-tock" for "clock"—the baby will acquire a "baby-talk" vocabulary. Even stuttering and stammering are sometimes traceable to imitation.

The Plateau Stage. The pattern of speech development is marked by spurts and resting periods. One of the resting periods, when little or no progress is made, is often referred to as the "Plateau Stage." This is reached between the ages of nine and eighteen months and coincides with learning to walk. As is true of adults, the baby is incapable of giving conscious attention to two things simultaneously. Because at this age walking and talking both require conscious attention and directed effort on the part of the baby, the baby chooses the activity he wishes to follow. Since walking, at that age, is more useful to him than talking, because it relieves the extreme helplessness that comes from inability to move without aid, the urge to walk seems to be more powerful than the urge to talk.

After walking becomes habitual, the baby's attention is again directed toward talking, and a spurt in learning to talk follows.

Shirley (1933) found that babies vocalized less than usual during the time a new motor act was being established. For example, between the ages of fourteen and twenty-three weeks, when reaching for objects develops as a motor skill, she reported that the babies studied by her vocalized less than between the fifth and thirteenth weeks. Vocalization then increased from the twenty-fifth to the thirtieth week, decreased at the thirty-first week, owing to sitting alone, and remained low during the thirty-third and thirty-fourth weeks, the median age for creeping. After walking was established as a motor skill, the amount of vocalization increased rapidly, in fact, far ahead of the prewalking period.

PRELIMINARIES TO SPEECH

The communication needs of the baby are expressed by gestures and expressive vocalizations rather than by speech. Vocalization, in the form of cries, explosive sounds, or "babbling," does not become a form of language until meaning is associated with the sounds made. When that occurs, the baby can communicate with those who know him well enough to understand what he is attempting to say, even though his vocalization may be meaningless to strangers.

Shirley (1933) reports that the median age at which the first comprehensible word was spoken in the examiner's presence was sixty weeks, while Gesell (1928), in his normative summary, claims that the normal child says two "words" at twelve months and four words at fifteen months. At the latter time, he also uses expressive jargon. That means that for the first twelve to fifteen months of a child's life, his communication is in forms preliminary to speech.

Prespeech Forms. There are three preliminary forms of communication commonly used by babies during the first months of life, which serve them temporarily as satisfactory forms of communication. These are (1) *crying*, (2) "explosive sounds" which soon develop into *babbling*, and (3) *gestures*. Of the three, the second is the most important from the long-range point of view because it becomes the basis for real speech. During the early months of life, however, crying is the most frequently used of the three.

1. *Crying.* Beginning with the third week of life, the crying of the baby becomes differentiated, so that it is possible for those who are familiar with babies to know what the tones and intensities of the cries signify. Each month, as the baby grows older, his cries become more differentiated in tone and are accompanied more and more by gestures and other bodily movements which make it relatively easy to interpret the meaning behind the cries.

CAUSES OF CRYING. Aldrich, Sung, and Knop (1945), with the cooperation of mothers, investigated the crying of 42 babies less than seven weeks of age. They found that the average baby at home had 4.0 prolonged crying spells, as contrasted with 11.9 in the hospital nursery. Hunger proved to be the most common cause of crying, while noise and light were the least likely causes. Other causes are shown in Fig. 42. Unknown causes, it may be noted, are next in frequency to hunger.

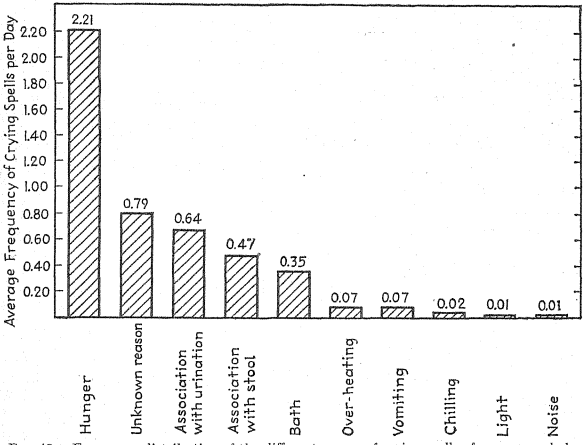

FIG. 42. Frequency distribution of the different causes of crying spells of an average baby on an average day. (*From C. A. Aldrich, C. Sung,* and *C. Knop, The crying of newly born babies.* 111. *The early home period. J. Pediat.*, 1945, **27**, *p.* 432. *Used by permission.*)

Crying, Bühler (1930) found, during the first months of life is traceable to bodily hurts and needs such as (1) pain, especially when related to digestion; (2) strong sensory stimuli, bright light, sharp noises, heat, or cold; (3) abrupt changes of posture or uncomfortable positions; (4) strong disturbances during sleep; (5) fatigue; (6) hunger; (7) failure of the intended reaction, such as inability to move due to restricting clothes or covers; (8) loss or removal of playthings (from the fifth month); (9) fear (from the eighth month); and (10) when contact with others is withdrawn (from the third or fourth month).

Kelting (1938), in an analysis of the crying of babies six to nine months of age, noticed that crying was most in evidence just before feeding and before the babies went to sleep for the night. The most common causes

of crying were thus listed as being hungry, being tired, and being too warm. The least frequent causes, Kelting found, were wanting attention, having gas pains, and being wet. The babies' crying ceased when a nurse neared the bed, when they were fed, bathed, placed on the floor, patted, had their positions changed, or were taken up.

SOCIAL ASPECTS OF CRYING. Before he is three months old, the normal baby has learned that crying is a sure method of getting attention. He learns also that when he does not cry, no one pays much attention to him. If, therefore, he wants attention, he calls for it by loud cries. It is not long before he has learned to use crying as a means to an end.

FIG. 43. Crying is often a bid for attention. (*From Parents' Magazine, October*, 1937. *Photograph by Black Star.*)

It is very easy to tell whether crying is for this purpose and whether the baby is becoming "spoiled." If such be the case, the baby will stop crying as soon as someone pays attention to him and, by smiling and other signs of pleasure, will show that all is well. This is very different from the cries of pain, hunger, cold, or some other physiological need which persists even after another person has entered into the situation. Figure 43 shows the characteristic bid-for-attention cry of a baby.

Bühler (1930) noted that, at four months, a baby will cry when an adult ceases to play with him; at five months, he will increase his crying if an adult enters the room and pays no attention to him; and at nine months, he cries if an adult approaches another child.

Bayley (1932) studied the crying of babies throughout the first year of life when they were exposed to strange persons and strange situations. Crying was found to occur on an average of 15 per cent of the total time when the babies were in these situations. It occurred most frequently in response to bodily pain and distress during the first month of life but, after that, fear of strange situations and unusual handling proved to be the most important factors in calling forth crying.

VARIATIONS IN CRYING. From the second month of life, the baby's cry is no longer a monotone but varies in intensity, tonal quality, and rhythm. Pain cries are, for example, shrill, loud, and interrupted by whimpering and groaning, or short, sharp, and piercing. The cry of discomfort is low and whimpering, while that of hunger is loud and

interrupted by sucking movements. Variations of crying, such as groaning, "fussing," whimpering, and sighing, appear by the end of the second month, while by the age of five months each baby makes sounds of displeasure characteristically his own.

How the hunger wail of a baby will change in pitch during the first nine months of life was investigated by Fairbanks (1942) using his own baby as a subject. During the first five or six months, he found a rapid and consistent rise in pitch of the hunger wails, covering a range of 6.7 tones, or more than an octave. This change, Fairbanks suggested, may be due to the rapid growth of the larynx during the first year of life. Kelting (1934) reported that the babies she studied showed a fairly large number of qualities of crying and that each differed greatly from every other baby in these qualities.

In an unpublished study of speech elements during the first six months of life, Irwin (1941*a*), working with Krehbill and Curry, noted that in an analysis of over a thousand vowel sounds heard in the cries of 40 newborn infants, the *ae* sound predominated. An overwhelming majority of the crying sounds were front vowels (92.0 per cent). Middle vowels were infrequent (7.0 per cent), and the back vowels were present about 1 per cent of the time. Consonant sounds during the first ten days of life made up only small percentage of the sounds. The glottal sound *h* was the most frequently used consonant, *w* and *k* were heard occasionally and *b*, *p*, and *m* were not heard at all.

Analysis of the crying of older babies showed that, by the fourth month, front vowels constituted only 57 per cent of the vowel sounds heard and 71 per cent at the age of six months. By the age of four months, the middle vowels had increased from 7 to 26 per cent and the back vowels from 1 to 16 per cent. Analysis of consonant sounds showed that during the second quarter of the first year, the glottal *h* constituted 60 per cent of all consonant sounds heard. The sound *g* was used about 20 per cent of the time; *m*, *n*, *b*, *d*, *k*, *w*, *l*, *j*, and *e*, about 10 per cent; and *t*, *v*, *z*, and *f*, less than 1 per cent. The remaining consonants were rarely heard.

Motor Accompaniment of Crying. Crying in young babies is always accompanied by bodily action. The entire body is active, and fatigue sets in if the crying is allowed to continue over a prolonged period of time. As the baby grows older, less and less activity accompanies crying. By the time the child is two or three years old, crying is accompanied by no more activity than one finds with other emotional outbursts.

Bayley (1932) observed that crying caused by fatigue is often accompanied by yawning, drooping, and rubbing the eyes, while crying caused by strangeness of place or persons in a mental-test situation is accompanied by clinging to the mother and turning away from the experimenter.

Kelting (1934) reported great individual variations in the position of the hands of the babies she studied during crying. Each baby, she noted, had its own characteristic type of reaction.

The most extensive and elaborate study of the characteristic behavior patterns accompanying crying in babies has been made by Ames (1941),

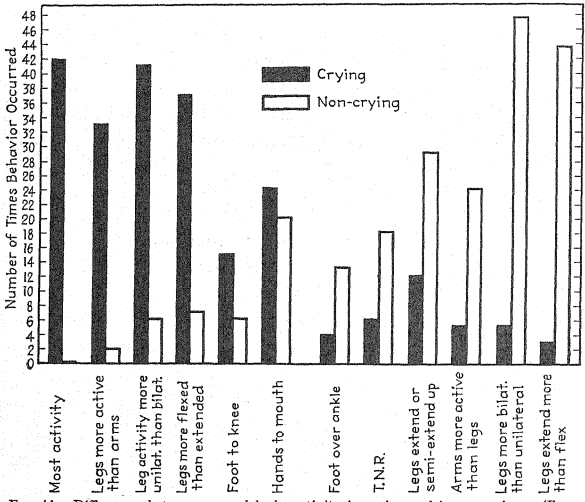

FIG. 44. Differences between general body activity in crying and in noncrying. (*From L. B. Ames, Motor correlates of infant crying. J. genet. Psychol.*, 1941. **59**, *p.* 242. *Used by permission.*)

who observed and photographed babies when they were crying spontaneously and when they were not crying. She reported that the difference between general body activity in crying and in noncrying is marked. In general, crying is accompanied by vigorous limb activity, strong flexor tendencies, and the breaking up or disorganizing of postures prevailing at the time of the onset of crying. Noncrying behavior, on the other hand, is characterized by limb extension, bilateral postures, greater arm than leg activity, and the holding of set postures. These differences in general body activity in crying and noncrying are illustrated in Fig. 44.

CRYING AMONG YOUNG CHILDREN. According to Jones (Watson, 1925), children cry when they are tired, hungry, or frightened; or when they are interfered with in some activity. Brackett (1933, 1934) found that, among nursery-school children, crying is predominantly social and that it decreases markedly with age. This shows a more mature type of

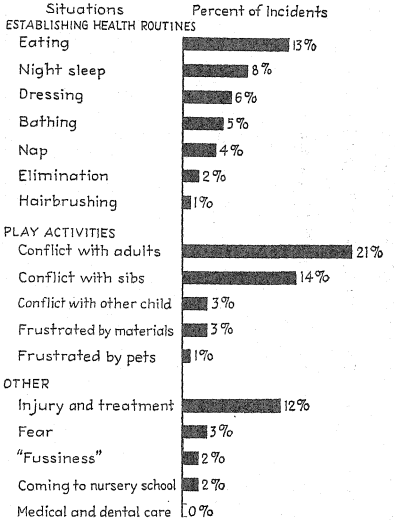

FIG. 45. Immediate situations causing crying in the home. (*From C. Landreth, Factors associated with crying in young children in the nursery school and the home. Child Develpm.*, 1941, **12**, *p.* 92. *Used by permission.*)

adjustment on their part. Crying occurred mostly in free-play situations rather than in routine situations, such as dressing, eating, and toileting. Brackett found no evidence that nursery-school children used crying as a substitute for language.

Much the same findings have been reported by Caille (1933) and Young (1942). Young noted that young children cry when older children attempt to take some possession of theirs, or because of actual or feared injury from an older child.

Landreth (1941) has studied the causes of crying in young children in the nursery school and at home. In Figs. 45 and 46 are shown the

immediate situations that cause crying in the nursery school and in the home. As may be seen from these figures, the most common causes of crying in the nursery school are attacks on the child's person, attacks on his property, frustrations by another child, and accidental injury. In

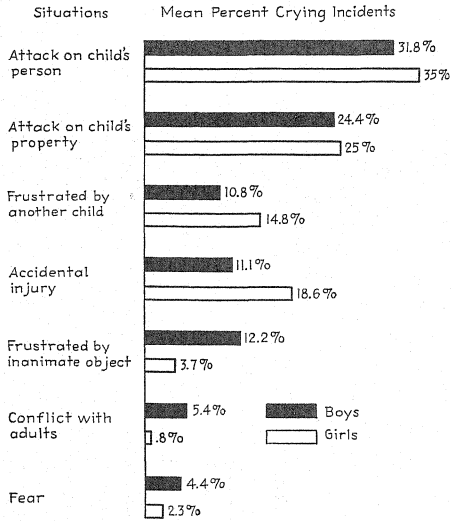

FIG. 46. Immediate situations causing crying in a nursery school. (*From C. Landreth, Factors associated with crying in young children in the nursery school and the home. Child Develpm.*, 1941, **12**, *p.* 89. *Used by permission.*)

the home, conflicts with adults, conflicts with a sib, eating, injury, and treatment most often led to crying.

REACTIONS TO CRYING. How children and adults will react to a baby's or a child's crying will depend to a large extent upon the age of the child. Crying in babies is regarded as normal because it is the only way the baby is able to make known his needs. When, however, the baby has learned to talk, his crying is not regarded as necessary. He is now looked upon as being "spoiled." As the years go on and the young child finds that playing with other children is more fun than playing with adults or playing alone, he likewise discovers that crying does not work

as it did when he was younger. It wins for him the scorn of his playmates, who label him a "crybaby."

How adults respond to the young child's crying has been investigated by Landreth (1941), who found quite different responses by adults in nursery school, compared with adults in the home environment. In the nursery-school situation, crying was most frequently met by consoling or giving physical care to the crying child, by censuring the child who caused the crying, by suggesting arbitration in property disputes, and by distracting the crying child. At home, crying was most often responded to by ignoring, reasoning, spanking, or by removal from the social group.

2. *Explosive Sounds and Babbling.* In addition to cries, many simple sounds are heard during the first months of life. Sounds heard during the first thirty days of life have been recorded by Blanton (1917). She found that the consonant sounds most often heard were *m* in conjunction with *a*, as "ma" (at), *n* as "nca" (nat), *g* as in "gah," *h* as in "ha" (at), *w* as in "wah" (at), *r* as in "rah" (at), *r* as in "burr," and *y* as in "yah" (at). The vowel sounds most commonly heard were *o* as in "owl," *e* as in "feel," *oo* as in "pool," *a* as in "an," and *a* as in "father." In addition to these, many simulated animal cries, such as the bleat of the goat, the whine of a young pig, and the wail of a wild cat, were readily distinguished.

An analysis of vowel sounds produced by babies at different ages has been made by Irwin (1948). The newborn infant's vowel-sound repertoire, he reported, is decidedly like that of the adult. During the first year of life, there is a preponderance of front and middle vowel utterances. After this, the number gradually diminishes, while back vowels increase until at 2.5 years, the percentage distribution approximates that of the adult.

These early sounds are explosive in character and are caused by chance movements of the vocal mechanism. They are unlearned and are universally found in all races and nationalities. They are found even among the deaf. Because they have no significance for the baby, and will have none until they are used as a means of communication, they may be regarded as a playful activity in that they give enjoyment to the baby. This type of vocalization is commonly referred to as "cooing." Gesell and Thompson (1934) have reported that at eight weeks, 42 per cent of the babies observed cooed and three-quarters or more at the ages of twelve and sixteen weeks.

Gradually, the number of sounds the baby can produce increases so as to include most of the vowel and consonant sounds necessary for speech. By the third or fourth month, the baby has learned, from practice, how to control the flow of air over the vocal cords, and he can

therefore produce sounds at will. By the sixth month, practice in vocalization makes it possible for the baby to combine certain vowel and consonant sounds as "ma-ma," "da-da," "na-na," or "bah-bah." Babbling is thus a form of vocal gymnastics, voluntarily produced, with no real meaning or associational value for the baby.

During the "babble age," which on the average extends from the third month to a peak at the eighth month, the baby derives keen enjoyment from listening to his own babbling. This is shown by the fact that babies babble more frequently when alone than when they are with others who can amuse them. It is especially evident in the case of deaf babies, who begin to babble at the usual age but who soon lose interest in this form of vocalization because they cannot hear the sounds they make. Latif (1934) found deaf babies babbled less than normal babies.

Babbling Sounds. It is almost impossible to record accurately the babbling of a baby because the sounds made are not like those used in speech. The observational studies that have been made show that babbling is more individual in content than it is generally believed to be and that, while there is a wide range of sounds made, there is also much repetition. The baby selects from the sounds he can make those which appeal most to him and then repeats these constantly, laughing and gurgling with enjoyment at his achievements. He is actually engaged in a form of self-imitation.

The first babble sounds are vowels, usually "a" and "u," and the first consonant used is generally "m." Shirley (1933) observed the following combinations of sounds at five months: "uggle-uggle," "erdah-erdah," "oddle-oddle," and "bup-bup-bup." With practice, the baby increases the number and combinations of sounds made. He acquires variations in pitch and inflection so that his babbling takes on a conversational tone.

At no time is babbling linked with specific objects, people, or situations. It is a form of playful activity which is engaged in only so long as the baby enjoys it or until an opportunity arises for another form of play of a more enjoyable type. While babbling at first serves no immediate purpose other than the pleasure it gives the baby, if continued, it soon proves to be a splendid opportunity to learn to control the different muscles connected with the speech mechanism.

3. *Gestures.* The third preliminary to speaking consists of the use of gestures. The baby quickly learns to use gestures as a means of expression and through them communicates with others. Commonly observed gestures during early babyhood are pushing the nipple from the mouth with the tongue, turning the head away from the nipple, or allowing food to run out of the mouth, which shows that the baby is not hungry; smiling and holding out the arms, indicating that the baby wants to be picked up;

squirming, wiggling, and crying during dressing or bathing, which show that the baby resents the restrictions to his activities.

The difference between the baby's use of gestures and that of the adult is primarily due to a difference in purpose. The baby uses gestures as a substitute for speech, to enable him to express thoughts, feelings, and emotions for which he has no other means of expression. In the case of the adult, on the other hand, gestures are used as a supplement to speech, to emphasize the meaning of the words spoken and thus to make them more forceful and effective. When the baby learns to say words and later to combine words into sentences, he has less and less use for gestures. In communities, therefore, where the frequent use of gestures is regarded as bad form, the young child gradually abandons the use of gestures and substitutes words for them.

Gesell's Norms. Gesell (1928) has given the following norms for pre-speech vocal activities:

1 month: Has differential cries for discomfort, pain, and hunger.
2 months: Makes several different vocalizations.
4 months: Vocalizes in self-initiated sound play (babbling).
5 months: Vocalizes displeasure on withdrawal of coveted object.
6 months: Vocalizes several well-defined syllables. Actively vocalizes pleasure with crowing or cooing.
9 months: Says Da-da or equivalent (pp. 128–132).

MAJOR TASKS IN SPEECH DEVELOPMENT

The child, in learning to speak, has four major tasks that must be mastered. These are interrelated, and successful achievement in one is essential to successful mastery of the others. The four tasks, each of which will be discussed in detail, are (1) *comprehension of the speech of others,* (2) *building a vocabulary,* (3) *combining words into sentences,* and (4) *pronunciation.*

1. Comprehension

Comprehension of the meaning of the speech of others precedes the use of words and, at every age, the passive or "comprehension" vocabulary is larger than the active or "speech" vocabulary. This is much the same as occurs when an adult learns a foreign language. The adult understands words spoken by others and can follow a conversation in that language before he can talk intelligibly to others or take part in a general conversation.

Because comprehension is not based alone on an interpretation of the words heard but on an understanding of the facial expressions and gestures used in accompaniment to the words, comprehension is an easier task than speaking. A young baby, by the age of three months, smiles

in response to the smile of another. The facial expressions and sounds closely related to such emotions as fear and anger are recognized soon afterward. From then on, his ability to understand gestures and facial expressions increases, and this aids him in comprehending words.

Similarly, gestures convey meaningful associations to a baby long before he comprehends spoken words. In fact, it is often difficult to tell how much of a little child's comprehension is owed to an understanding of the words themselves and how much to facial expressions and gestures. Very young children learn to comprehend the meaning of commands, such as "No-no," "Stop," "Come here," or "Lie down," partly because of an association with the act, as lifting the hand when the words "No-no" are spoken, and partly through an interpretation of the tone of voice used by the individual who gives the commands. Up to the age of eighteen months, words must be reinforced with gestures if the speaker wants to be sure that the child will comprehend what he hears. Even simple directions, such as "Put the cup on the table," need to be supplemented by a gesture of pointing to the table and to the cup.

Norms for Comprehension. Information regarding what may be expected for the normal child so far as speech comprehension is concerned comes from standard tests of intelligence and normative summaries. In the Terman-Merrill (1937) scale of intelligence tests, a block, spoon, apron, toy cat, cup, and thimble are placed in a row on a table, and the following requests given: "Give me the kitty," "Put the spoon in the cup," and "Put the thimble on the block." At the age of two years, the child should comprehend well enough to respond correctly to two requests, and at 3½ years to the three requests. At the age of 2½ years the child is shown a large paper doll and is requested to "Show me the dolly's hair," mouth, ear, and hands. At four years, comprehension in the second degree is tested by the child's response to such questions as "Why do we have houses?" or "Why do we have books?" Kuhlmann (1922) asks children of that age: "What must you do when you are sleepy?" "What must you do when you are cold?" "What must you do when you are hungry?"

To test the preschool child's comprehension of words relating to sizes, shapes, and position, Holmes (1932) devised a test in which the child was asked to point to the object named in a book of different figures, as "Point to the diamond" or "Point to the triangle." The items known to the extent of 60 per cent or better were moon, half-moon, star, cross, circle, square, and diamond. The children had trouble in identifying the hexagon, cylinder, triangle, cone, oval, oblong, jagged and wavy lines.

In a second experiment, a scene was laid out on the table and the child was told a story about a Teddy bear. His comprehension was measured

by his ability to make the Teddy bear do what the story indicated. A portion of the story was, "While he was thinking hard about it, he jumped *forward* and he jumped *backward*. . . . There were so many sticks there that at first he didn't know which one to take. He looked them all over and then picked up the *crooked* one: 'I don't want that,' he said, and laid it *behind* him." All words in italics were critical words. The child was asked to do what was designated in the sentence containing the word. It was found that he had trouble in comprehending the meaning of such words as "rough," "narrow," "broad," "far," "near," "shallow," and "smooth."

2. Building a Vocabulary

Two Forms of Vocabulary. In the development of vocabulary, two distinct forms may be recognized. (1) *The general vocabulary,* consisting of words with a general meaning that can be used in a variety of different situations. Such words as "man," "beautiful," and "go" belong to this class. (2) *The special vocabulary,* consisting of words with specific meanings, which can be used only for certain situations. Because words of the general vocabulary are more useful than those with specialized meanings, they are learned first. At every age, the general vocabulary is larger than the special vocabularies.

1. General Vocabulary. In the development of a general vocabulary, the young child does not learn all parts of speech simultaneously. Rather, he learns first the words that will be most useful to him and which are easiest to learn, like the names of objects or persons. He learns last the parts of speech which are least useful and most difficult to use, the pronouns, for instance, because he can readily substitute nouns or gestures for them.

The first words used by the child are *nouns,* generally consisting of monosyllables, taken from favorite sounds the child has babbled. Later, these are doubled or trebled. These words are used to designate persons or objects in the child's environment, such as "mamma," "dada," "choo-choo," or "babe." Sometimes they have been learned by imitating the words the child has heard others use; sometimes a word learned for one object is applied to all objects of a similar nature, as "doll" for all stuffed toys or "bonn" (bonnet) for all head coverings; and sometimes the name originates as a pure invention on the child's part, probably from the sound the object makes, like "dong-dong" for "train" or "tick-tock" for "watch."

After the child has learned enough nouns to apply names to the people and objects in his environment, he begins to learn *verbs,* especially those which designate action, "give," "take," "hold," and so on. *Adjec-*

tives and *adverbs* appear in a baby's vocabulary from the age of 1½ years, while *prepositions* and *pronouns* appear last. The adjectives most commonly used at first are "good," "bad," "nice," "naughty," "hot," and "cold," which are applied principally to people, food, and toys. The earliest adverbs to appear in the child's vocabulary are generally "here" and "where." The difficulty the young child experiences in trying to discover when to use "me," "my," "mine," or "I" to refer to himself

TABLE XXIV. MEAN PERCENTAGE OF EACH PART OF SPEECH BY CHRONOLOGICAL AGE AND SEX
(Based on Total Number of Words Used)

C.A., months	Sex	Nouns	Verbs	Adject.	Adv.	Pro-nouns	Con-junct.	Prep.	Interj.	Misc.
18	B	43.6	16.7	5.1	5.1	12.8	0.0	0.0	16.7	0.0
	G	51.5	13.1	10.7	8.5	9.8	0.6	0.0	5.5	0.3
	All	50.0	13.9	9.6	7.9	10.3	0.5	0.0	7.6	0.3
24	B	49.3	15.3	5.[illegible]	3.7	15.0	0.0	2.0	3.4	5.4
	G	35.5	22.6	11.6	8.0	14.5	0.7	4.1	2.2	0.8
	All	38.6	21.0	10.3	7.1	14.6	0.5	3.6	2.4	1.8
30	B	25.4	24.9	14.4	6.3	21.0	0.5	4.3	1.5	1.8
	G	26.0	22.3	14.3	6.9	17.6	2.5	4.9	3.8	1.7
	All	25.8	23.4	14.3	6.7	19.0	1.7	4.6	2.8	1.8
36	B	23.6	23.5	15.4	7.8	21.3	1.1	5.4	1.5	0.6
	G	23.2	22.5	16.7	6.3	17.3	3.7	8.4	1.5	0.5
	All	23.4	23.0	16.1	7.0	19.2	2.4	6.9	1.5	0.5

Source: McCARTHY, D. A. *The language development of the preschool child.* Minneapolis: Univ. Minn. Press, 1930, p. 114. Used by permission.

causes no small amount of confusion and thus results in his avoiding their use as long as possible.

General Vocabulary at Different Ages. At fifty-two weeks of age, Gesell and Thompson (1934) report, the words used by babies fall into the following classifications: (1) things to eat, (2) qualities of objects, (3) activities or relationships, (4) inanimate objects, (5) persons, (6) exclamations to attract attention, (7) relating to self, (8) animals, (9) interjections, and (10) social intercourse. An analysis of the spontaneous conversations of two- and three-year-olds led Smith (1926) to conclude that at two years, verbs, nouns, and pronouns were the parts of speech most frequently used, while at the age of three, verbs and pronouns predominated.

An analysis of the parts of speech used by children of different ages

was made by McCarthy (1930) and the results are presented in Table XXIV. In early babyhood, the largest percentage of words used consisted of nouns, but this percentage decreased rapidly from 50.0 per cent at eighteen months to 23.4 per cent at three years, because there was an increase in the use of other forms of speech. Verbs, adjectives, pronouns, conjunctions, and prepositions also increased in the frequency of use, the most pronounced increase being in the case of the latter two. Interjections, on the other hand, decreased from 7.6 per cent at eighteen

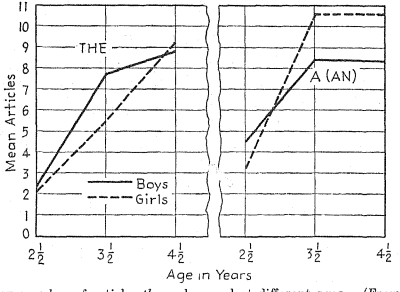

FIG. 47. Mean number of articles *the* and *a* used at different ages. (*From J. B. Carroll, Determining and numerating adjectives in children's speech. Child Develpm.*, 1939, **10**, *p.* 218. *Used by permission.*)

months to 1.5 per cent at three years, while the number of adverbs in use remained practically constant.

Among nursery-school children, Carroll (1939) found, descriptive adjective phrases increased markedly in number from ages 2.5 to 4.5 years. This was true also of the use of "the" as compared with "a," as shown in Fig. 47. In the group of preschool children studied by Young (1941), pronouns and verbs made up 55 per cent of the children's speech. At all ages studied, these parts of speech were found to surpass nouns.

Young's analysis of the different parts of speech used by the children studied revealed the following percentages of use: nouns, 16 per cent; pronouns, 25.8 per cent; verbs, 29.2 per cent; adverbs, 10.19 per cent; adjectives, 7.1 per cent; conjunctions, 1.7 per cent; prepositions, 4.3 per cent; articles, 2.4 per cent; and interjections, 2.8 per cent. Nouns and interjections were found to decrease in usage with age, while articles, conjunctions, prepositions, adverbs, and infinitives increased in varying degrees with age.

In an analysis of pronouns used by nursery-school children, Young

(1942*a*) found "I," "me," and "myself" were used more than all other personal pronouns. Together they made up 38 per cent of all used. "It" and other pronouns were used 50 per cent of the time. Exclamatory words and syllables, distinguished by the pronounced degree of emotional tension accompanying them, were likewise analyzed by Young (1942). Among nursery-school children, he found an incidence of use of 10.1 per hour per subject, with boys showing a greater tendency to use them than girls. The four-year-olds used them more than the younger children.

Affirmation in the form of "yes," "yeah," "yep," "yeh," and "uh-huh" occurred on an average of 3.0 responses an hour per child. Negation, such as "no" and "nope," reached its peak at thirty-six months. The next greatest number of usages was at thirty and fifty-four months. Girls, he found, used words of this type more frequently than did the boys.

2. Special Vocabularies. Early in childhood, when attention is concentrated on the development of a usable vocabulary, the child has little time to build up special vocabularies which, on the whole, are more superfluous than essential. From the age of three years, however, special vocabularies are built up at the same time that words of general usage are being learned.

The most important of the special vocabularies, and the ages at which they are developed, are as follows:

a. The "Trick" Vocabulary. This consists of words pronounced correctly by the child in response to the request of another. The little child is asked to say long and complicated words, like "Mississippi," "esophagus," and "Wanamaker's," for the delight of the adults who hear him. As the child rarely ever knows the meaning of the words he speaks, their use is therefore merely a form of "showing-off." The age at which the "trick" vocabulary is most used is between one and two years.

b. The "Etiquette" Vocabulary. This type of special vocabulary consists of such words as "please," "thank you," or "I'm sorry." The child should learn to use these words as soon as he can speak coherently and, by the age of five or six years, should have an etiquette vocabulary as large and as well developed as that of the adults of his environment. How large this vocabulary will be is entirely dependent upon the training the child has received.

c. Color Vocabulary. Because of the young child's interest in color, names of different colors are learned at an early age. In the 1922 Stanford Revision of the Binet-Simon scale, Terman (1922) has placed the color-naming test, in which the child is asked to name without error the colors red, green, blue, and yellow, at the age of five years. However, most children of normal intelligence, from average or even inferior

environments, know the names of the primary colors before that age. Cook (1931), in a study of color naming among children, ranging in age from seventeen months to six years, found that by the age of two years the children could name accurately, in 25 per cent of the cases, the four primary colors, red, green, yellow, and blue and, by the age of six years, the ability to do so had increased to 62 per cent.

d. Number Vocabulary. While many young children of 2½ or 3 years of age can count up to 10 or more, it is questionable whether they understand the meaning of the words they use. Their number vocabularies therefore fall into the category of "parrot speech." However, through play or direct teaching, the child gradually learns the meaning of many numbers. According to the 1922 Stanford Revision, the child of six years should be able to count to 13 pointing to pennies while he counts, to show that he understands the meaning of the words he uses. In the 1937 Revision of the Stanford-Binet Test, the child is expected to be able to count three objects, blocks, beads, or pennies, at the age of five years and, at the age of six years, know the meaning of the words "three," "nine," "five," "ten," and "seven" well enough to count out the number of blocks requested from the twelve that are placed before him.

e. The Time Vocabulary. Because of the diversity of activities characteristic of the different parts of the day, the child comes to know the meaning of words related to them. By the age of six or seven years, the child should know the meaning of such simple words as "morning," "afternoon," "night," "summer," and "winter." When he enters school, he soon learns the names of the different days of the week and months of the year.

f. The Money Vocabulary. While to the very young child, all coins are "money" or "pennies," to the child of four or five years, the different coins begin to have specific names, according to their size and color. How large the child's money vocabulary is depends upon the child's environment. Children of poorer environments have, as a rule, larger money vocabularies than children from the better neighborhoods because they are often entrusted with money when sent on errands by their parents. According to the 1922 Stanford Revision, the child of six years should be able to name pennies, nickels, dimes, and quarters. Before the high-school age, the youth should know the names of all forms of currency in common use in his own country.

g. The Slang Vocabulary. "Slang" is a form of unauthorized speech. This means that slang words are not to be found in a dictionary, or their use is not sanctioned by authorities on correct speech. Should these words prove to be offensive to those who hear them, they are generally referred to as "swearing." The dividing line between "slang" and

"swearing" thus depends primarily upon the personal reaction to the words heard.

During childhood, the use of slang or swear vocabularies is purely imitative and without any real significance so far as the user is concerned. The child uses words of this sort to identify himself with the older children or to show off by shocking the adults of his environment. In the poorer neighborhoods, the slang vocabularies of young children are, on the whole, larger than those of children of better neighborhoods where, as a rule, children hear fewer words of this type. Likewise, sex differences are negligible.

From the age of seven or eight years, the use of slang is no longer imitative or "show-off" in its purpose but rather serves as a means of expressing feelings and emotions for which the child has no adequate form of vocal expression. While the child may invent some of the swear or slang words he uses, this vocabulary is, for the most part, an imitation of the words used by high-school students. He thus not only has the satisfaction of a readily usable vocabulary for emotional expression but he also has the added satisfaction of self-importance which comes from identifying himself with high-school or college students.

Kasser (1945) studied the slang used by orphan children in a self-contained community, Mooseheart. Slang, he found, originated in the high-school group. The younger children aped the older in the use of slang words. No real sex difference was found to exist in this group, although boys, as a rule, use more slang than girls. Nouns, verbs, and adjectives were the parts of speech most often put into slang forms.

Sex differences in the use of slang and swearing from the beginning of the school age have been found to exist. Girls, Conradi (1903) found, use milder terms to express their feelings than do boys, who favor words of a rougher, more objectionable form that closely resembles swearing. Girls, likewise, were found to use slang less frequently than boys. Melville (1912) reported that there was a 33⅓ per cent greater number of slang expressions used by boys than by girls. Boys, as a rule, take keen delight in using slang at times when it attracts attention, such as in the presence of adults, and they thus add to their feeling of self-importance.

After the child enters school, the social environment is less important in determining the amount of slang used than in the preschool days. Boys and girls from superior social and cultural environments use slang freely at the typical "slang ages," and the slang they use consists of what is in vogue at the time.

h. Secret Language. A very common accompaniment of the pre-adolescent gang behavior is the development of a secret language in the form of "pig Latin," written symbols, or signs made with the fingers. The

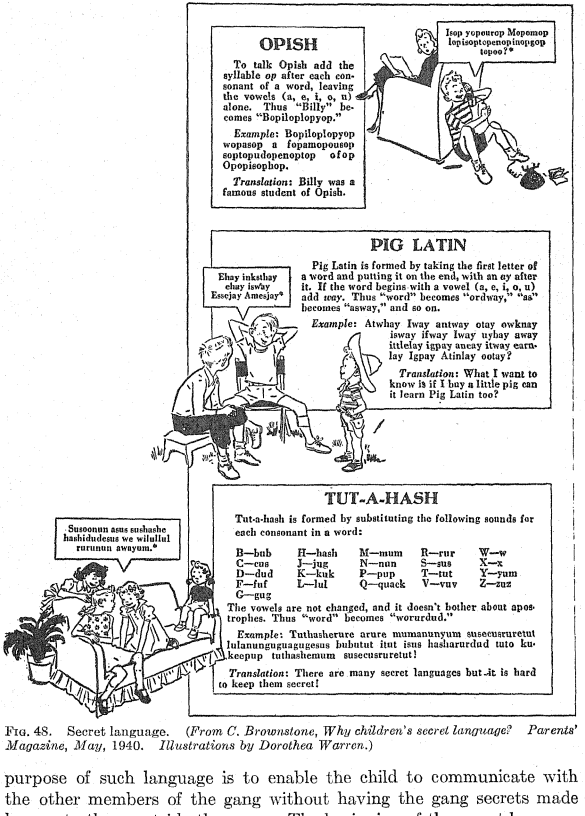

FIG. 48. Secret language. (*From C. Brownstone, Why children's secret language? Parents' Magazine, May,* 1940. *Illustrations by Dorothea Warren.*)

purpose of such language is to enable the child to communicate with the other members of the gang without having the gang secrets made known to those outside the gang. The beginning of the secret-language age comes around the eighth year and extends to approximately the fifteenth year, with a peak between the tenth and thirteenth years. While both boys and girls use secret language in its different forms, it is, how-

ever, more popular among girls than among boys. Girls delight in spending hours trying to develop words, signs, or symbols that cannot be understood by the uninitiated. Figure 48 illustrates three forms of secret language.

Size of Vocabulary. How many words will appear in the child's vocabulary at different ages depends to a large extent upon the intelligence of the child, what chance he has had to learn new words, and whether there has been an incentive to learn words. Numerous studies of the vocabularies of young children at different ages have been made

TABLE XXV. MEAN NUMBER OF WORDS AND MEAN NUMBER OF DIFFERENT WORDS USED
By Chronological Age and Sex

C.A., months	Mean number of words			Mean number of different words		
	Boys	Girls	All	Boys	Girls	All
18	8.7	28.9	20.3	5.4	13.6	10.0
24	36.8	87.1	66.0	16.6	37.3	29.1
30	149.8	139.6	143.7	52.8	49.8	51.0
36	164.4	176.2	170.3	60.1	66.0	62.8
42	200.8	208.0	203.7	76.7	90.6	82.3
48	213.4	218.5	216.3	91.1	93.8	92.6
54	225.4	236.5	230.5	95.8	140.0	99.5

Source: McCARTHY, D. A. *The language development of the preschool child.* Minneapolis: Univ. Minnesota Press, 1930, p. 113. Used by permission.

but, owing to the fact that different-sized groups have been studied and different techniques used, there is little agreement in their findings. A brief summary of a few of the studies will, though, give a general idea of the approximate size of a child's vocabulary at different ages.

At the age of nine months, most babies can say "mamma" and "dada" and, at the age of one year, can say two or three words other than "mamma" and "dada." Carroll (1939) has reported significant increases in vocabulary from 2.5 to 4.5 years. According to Young (1941), the number of comprehensible words used at thirty months per 10-minute period is 20.6, and at fifty-four months, 73.4 words.

In McCarthy's (1930) study of the speech of preschool children, an analysis was made of the number of words used, as well as of the number of different words used. Her data were based on 50 consecutive responses for each child in nine samples of running conversation. These data are presented in Table XXV.

As the child reaches the school age, his general vocabulary increases rapidly, partly as a result of direct teaching of words and their meanings

by his teachers and, later on, partly as a result of reading for pleasure. How great the increase will be from year to year depends to a large extent upon the educational and cultural advantages present during the school and college years. Smith (1926) has reported the average size of vocabulary at ages ranging from one to eighteen years, and Terman (1922) has estimated the average size of vocabulary at different ages from the Stanford-Binet vocabulary test. The combined results of their studies are presented in the accompanying table.

TABLE XXVI. SIZE OF VOCABULARY AT DIFFERENT AGES

Age, Years	Number of Words
1	2–3 (Smith)
2	272 (Smith)
3	896 (Smith)
4	1,540 (Smith)
5	2,072 (Smith)
6	2,562 (Smith)
8	3,600 (Terman)
10	5,400 (Terman)
12	7,200 (Terman)
18	15,000 to 19,000 (Smith)

After administering the Seashore-Eckerson English Recognition Vocabulary Test to children in grades 1 to 12, M. K. Smith (1940, 1941) noted a steady increase in the number of words known by the children. The size of the children's vocabularies, she commented, exceeded previous estimates. For grade 1, the average number of words in the total vocabulary is 23,700, with a range of 6,000 to 48,800. For grade 12, the average is 80,300, with a range of 36,700 to 136,500.

3. FORMING SENTENCES

"Single-word" Sentences. (Combining words to form sentences generally begins before the child's second birthday.) In the earliest sentences, one word alone is used, a noun or verb that, when combined with a gesture, expresses a complete thought. For example, "give," when accompanied by pointing to a toy, means "give me the toy." The word "ball," when accompanied by the holding out of the arms in the direction of the ball, means the same thing. This "single-word" type of sentence is used first from approximately twelve to eighteen months of age, after which the child begins to put two or more words together and supplements these with gestures. According to Nice (1925*a*), the child's skill in sentence structure is a simple criterion of his mastery of speech.

Early Word Combinations. (The child's first attempt at sentence formation consists of combining two or more words, formerly used singly, into a phrase, which is supplemented by gestures. These do not make a

complete sentence, for pronouns, prepositions, and conjunctions are rarely used. Nice (1933) has reported the average age for early word combinations to be 17.5 months; Shirley (1933) has given a median age of 101.0 weeks, and Gesell (1928), 21 months.)

By the time the child is two years old, he combines words into short sentences, most of which are incomplete, but which nevertheless express, with the aid of gestures, a complete thought. These sentences contain one or more nouns, a verb, and occasionally adjectives and adverbs. The less essential words, such as prepositions, pronouns, and conjunctions, are omitted. Typical sentences of this type are "Hold doll." "Go bed." "Go bye-bye." "Want drink."

Muntz (1928) found that 60 per cent of the two-year-olds whom he studied used sentences. At the age of 2½ years, McCarthy (1930) reports, the average length of sentence is 3.1 words, at 3 years, 3.4 words, at 4 years, 4.4 words, and at 4½ years, 4.6 words. At that age, sentences are complete or are made up of two short sentences connected with the word "and." The tendency to omit the verb, McCarthy found, reaches a peak between twenty-five and thirty months of age and then decreases. Young (1941) reported that at thirty months the mean response is 3.2 words and at sixty months it has increased to 5.2 words.

From mothers' reports of sentences used by their children, Gesell (1940) has compiled the following examples of sentences that normal children of twenty-four months of age use:

Papa gone.
Come, Kitty.
I see Daddy.
Cup all gone.
Where's Daddy gone?
Get the —— (one word completion).
I want my cup.
You get it for me.
Shut that door.
I want some more.
Where's the ball, Mamma?
I see Daddy go bye-bye car.
I put it on the chair.
I don't want to go to bed.
Take 'em and put 'em in there.
Mother, why me left in bed?
Don't forget the 'nanas.
Harold's out in the yard.
Baby sat in my lap.

(Page 197)

Stages in Sentence Development. Nice (1925*a*) has given four stages in the development of sentences:

1. *Single-word Stage.* This starts at approximately the beginning of the second year and lasts from 4 to 12 months, with an average duration of 6.6 months.

2. *Early Sentence Stage.* This stage, beginning between thirteen and twenty-seven months of age, average at eighteen months, lasts from 4 to 7 months. The majority of early sentences are incomplete and consist mainly of nouns, verbs, adverbs, and adjectives. Pronouns, prepositions, and conjunctions appear very seldom or never.

3. *Short-sentence Stage.* Short sentences consist of three to four words. This stage appears at two years of age, is common at three, and occasionally persists as late as the age of four or even five. The sentences are short, Nice explained, partly because of the simplicity of the little child's ideas and partly because of the omission of many minor words. Sentences at this stage, which have an excess of nouns, lack articles, auxiliary and copulative verbs, prepositions, and conjunctions. Approximately 20 to 60 per cent of them are incomplete.

4. *Complete-sentence Stage.* The sentence of six to eight words is characteristic of the more advanced children three years of age or of children with normal speech at four years of age. When this stage is reached, the child has practically reached the level of adult speech. Pronouns, prepositions, conjunctions, and articles are now used. Typical examples of a three-year-old's sentences are "I not a bird," or "I bigger Howard"; and of a 3½-year-old, "If a house is on fire, put water on it. Then it will not make holes in it. And you can live in it forever" (Nice, 1925*a*).

By the age of six years, the child should have command of practically every form of sentence structure. The length of the sentence, Davis (1937*a*) found, increases with age up to 9½ years. The sentences of young children are apt to be loosely constructed and complex in character, with a large percentage of adverbial clauses and a small percentage of noun clauses. When his attention is concentrated on some topic or situation, he is apt to use very long sentences made up of a number of short sentences joined together with "and" or "but."

Grammatical Errors. Grammatical errors are common up to the age of three years. This is due to the difficulties the young child has in putting words together. His major problems are in the use of pronouns and verb tenses. At the age of two years, few children use pronouns correctly, while at the age of three years, about 75 per cent do. The confusion of single and plural tenses is likewise great, and, unless corrections are made when errors occur, the child forms the habit of making grammatical errors. Errors of this sort are especially frequent in homes where poor grammar is common.

An investigation of errors in sentences made by children from two to six years of age was carried out by Smith (1933), who found the frequencies per 1,000 words, as shown in Table XXVII.

Typical examples of errors made were in verbs: use of "can" and "may," "lay" and "lie"; in nouns: "mans" "foots," and "tooths"; in articles: use of "a" and "an"; in agreement of subject and verb: "it dont"; and in confused parts of speech: "I am going to the low (bottom of page)," and "give me the rub (eraser)."

TABLE XXVII. FREQUENCY OF ERRORS PER 1,000 WORDS

Types of error	Age, months				
	24	36	48	60	66–72
Incomplete sentences:					
Copula omitted	38	15	4	1	1
Others	225	71	36	28	32
Articles	39	15	3	2	2
Verbs	30	24	17	12	11
Prepositions	11	8	5	2	4
Nouns and pronouns	6	4	2	1	1
Agreement	8	6	3	2	1
Confused parts of speech	3	5	1	1	½
Other errors	3	3	2	2	1

Source: SMITH, M. E. Grammatical errors in the speech of preschool children. *Child Develpm.*, 1933, 4. Condensed from table on p. 184. Used by permission.

4. PRONUNCIATION

The pronunciation of words is learned by imitation in the case of young children. The child copies the sounds he hears and thus pronounces words as he heard others pronounce them. He pronounces words incorrectly as easily as correctly. In early childhood his ability to imitate sounds is so flexible that his entire pronunciation can readily change in a short period of time, should he be placed in a new environment where those with whom he associates pronounce words differently from those with whom he formerly associated. By adolescence, on the other hand, pronunciation has settled into a habit and is hard to change.

In Childhood. There are marked individual differences in the child's ability to pronounce words. Some children speak so distinctly that they may readily be understood by others. On the other hand, equally as many children pronounce their words so poorly that a mother or nurse has to be called upon to interpret what they say. Even at three years of age, many children show traces of infantile pronunciation, such as "wain" for "rain" and "dat" for "that."

The child's pronunciation becomes increasingly comprehensible as he grows older. Most infantile forms are gone by the fifth or sixth year. The babyish accent, characteristic of the first years of life, gives way to a more mature tone of voice. While the voice is still high-pitched, the pronunciation of the child is clearer and stronger than that of the baby. Davis (1937*a*) found that children with faulty pronunciation used shorter sentences, had a more limited vocabulary, and lacked spontaneity of response compared with children whose pronunciation was more mature.

From a study of preschool children, McCarthy (1930) reported that by the age of 3½ years, the child's speech is almost completely comprehensible. This development occurs earlier in girls than in boys.

Correct pronunciation of the sounds of the English language by preschool children was studied by Wellman *et al.* (1931). One hundred and thirty-three sounds, including 66 consonant elements, 48 consonant blends, 15 vowels, and 4 diphthongs, were tested by presenting pictures to the children and recording in phonetic symbols the words given in response. At the age of three years, 82.5 per cent of the diphthongs, 75.2 per cent of the vowels, 68.4 per cent of the consonant elements, and 51.8 per cent of the consonant blends were correctly given as compared with the range of from 87.2 to 90 per cent at the age of five years. The sounds most often given correctly were 16 consonant elements, like *t*, *p*, *b*, *m*, and *n*; and four vowels, *i*, *a*, *e*, and *u*.

Tonal Qualities. One of the most characteristic and, at the same time, unfortunate aspects of speech during the school years is the coarsening of the tonal qualities of the voice. This is not the result of maturation but comes from screaming and shouting, which so invariably accompany play at that age. This strain on the vocal mechanism, at an age when it is not strong enough to withstand such strain, generally results in a coarsening of the tonal qualities to such an extent that it can never be overcome completely. To the child, this is of little importance, especially in the case of boys who assume the attitude that talking in a pleasant voice is a sign of a "sissy."

SPEECH DISORDERS

At the time when the young child is learning to speak, speech disorders are most apt to develop. Because of the difficulty the young child has in controlling his speech mechanism, disorders of one sort or another can develop just as readily as correct speech unless control is exercised by those who are responsible for the care of the child. The detrimental effect on the health, happiness, and success of the individual, not in childhood alone but throughout life, justifies the serious consideration given to any disorder in speech that may appear during babyhood or even as late as the adolescent years.

Causes of Speech Disorders

Few speech disorders are hereditary. Occasionally a defect in speech can be traced to a tongue-tied condition, or to deformed teeth, palate, lips, or jaws. But the majority of speech disorders are due to environmental causes, faulty learning, caused by imitation of a poor model, such as a foreign accent, or attempts to speak quickly because of excite-

ment. Imperfect hearing and muscular weakness of the tongue and lips, owing to lack of full use and excessive nervousness, may also be the causes of speech disorders.

Bean (1932) maintains that children's mispronunciations are due to crude perceptions rather than to inability to pronounce the elemental sounds. Karlin *et al.* (1940) studied nine children who had speech defects due to no obvious physical cause and compared them with children who had normal speech. The children having speech defects showed retardation in their ability to do tasks requiring motor speed and were found to have endocrine dysfunction, unfavorable environment, and a hearing loss of 18.8 per cent, as compared with 5.8 per cent loss in the control group. The results led the investigators to the conclusion that these factors, singly or in combination, may operate to produce speech defects.

Types of Speech Disorders

Speech disorders may be divided, roughly, into two classes: (1) *errors* and (2) *defects*. The difference between the two is largely arbitrary and one in which the severity of the disorder is the outstanding characteristic. In the case of speech errors, the cause is primarily faulty learning, while in speech defects, emotionality and malformation of the mouth may also be responsible for the trouble.

1. Speech Errors. Speech errors, which are so common in babyhood, but which usually disappear by the time the child enters school, generally arise from faulty learning that has not been corrected by those in charge of the child. "Baby-talk," often regarded as cute, is in reality speech in which simple errors, easily corrected, are allowed to persist. A few of the most common of these, together with their causes, are:

a. Omissions. In words of two or more syllables, the young child often does not perceive accurately all the syllables that have been spoken. With this incorrect auditory image as a model, he attempts to imitate the spoken word as he remembers it. Generally, one or two syllables in the middle of the word, rather than at the beginning or end of it, are omitted. Typical examples of omissions are "hankchief" and "hanky" for "handkerchief," "seepy" for "sleepy," and "buttfly" for "butterfly."

b. Interchanges. Difficult words, when heard only occasionally, are often remembered incorrectly, with some of the letters or syllables interchanged in position. These incorrect auditory images, from faulty auditory perception, could easily be corrected by the child if it were not for the fact that parents or others find the errors amusing and permit the child to continue using them until a definite word habit has been formed.

Examples of interchanges are "aks" for "ask," "psoon" for "spoon," and "bicksit" for "biscuit."

c. Substitutions. In substitutions, the speech error lies in the insertion of letters, syllables, or even totally new words for the words heard. Davis (1937*b*) found that the digraph "th" was the most difficult sound for the child to produce at all ages. Often "d" is substituted for "th," as in "dat" for "that" and "de" for "the." Early "baby talk" contains many substituted words in which the baby develops his own words for objects in his environment, the words coming often from the sounds made by the objects. Common examples of substitutions are "tick-tock" for "clock," "choo-choo" for "train," "babe" for "baby," "cawkee" for "coffee," and "laly" for "lady."

2. Speech Defects. Speech defects are more serious than speech errors not only in their causes but also in their effects on the attitude and social adjustment of the individual in later life. Because of their seriousness, they have been more carefully studied than speech errors, and attention from both the physician and educator has been given to them. There are a number of speech defects, the most common of which are

a. Lisping. This consists of letter-sound substitutions, the most common form of which is the substitution of "th" for "s" or "z," as in "Thimple Thimon" for "Simple Simon." Other common forms of letter-sound substitutions are "s" for "th" or "sh"; "sh" for voiceless "l"; "r" for "u"; or "u" or "y" for "r."

Two of the most unusual causes of lisping are deformation of the jaw, teeth, or lips and a tendency to cling to infantile speech. In the case of the former, when the lower jaw protrudes beyond the upper, there is apt to be a slight lisp. During the transitional stage from first to second teeth, or the "toothless" age, there is often a lisp which, if not checked, may become a habit. Most lisping, however, is a type of infantilism. The child continues to talk in this babyish way because he discovers that others think it "cute" and laugh at him. In many cases, adults talk to him in lisping tones, in imitation of his lisp, giving him an incorrect model to copy.

Among preschool children, lisping is one of the most common speech defects. But because lisping is the source of much ridicule, most children whose lisp is not due to a physical cause learn to overcome it early in their school careers. The result is that there are few lispers to be found among high-school or college students.

b. Slurring, or Indistinctness of Speech. Slurring is due to inactivity of the lips, tongue, or jaw. It is sometimes caused by paralysis of the vocal organs or lack of development of the tongue, especially of the

musculature of the tongue, which often is an accompaniment of rickets. In other cases, an emotional attitude of timidity may be responsible for inactivity of the lips and tongue. The child frightened by the presence of other people keeps his lips partially closed and mumbles his words. Finally, it may be due to rapid speech, caused by excitement in which the child, in his haste to say all that he wants to say, rushes through the words without pronouncing each carefully and distinctly. This last cause is responsible for the cases of slurring that occur for the first time during the school years.

c. *Stuttering.* This is found in about 1 per cent of the children of school age. It shows itself in many ways, primarily in repetition of the initial letters or syllables of a word or even in the repetition of the entire word. The spasms of stuttering differ in different individuals and also differ, from time to time, in the same individual. This defect is caused more by nervousness and emotional tension than by any other condition. It generally begins at a very early age.

Blanton (1929) studying 400 cases of stutterers, varying in age from eighteen months to thirty years, found that the major portion began to stutter at the age of 2½ years, while the second most important period for starting to stutter was six years, when the child enters school. According to him, these two ages represent important breaks in the child's life. In the case of the first, the child is breaking away from babyhood, while in the case of the second, he is breaking away from home environment and is establishing himself in a broader social environment.

Adjustments at both periods are difficult for the child and are accompanied by emotional strains that may readily lead to stuttering. Stuttering is therefore, according to Blanton, a symptom which expresses lack of adjustment to the group and is caused by conscious or partly subconscious fear of meeting the group. In different people, different situations give rise to stuttering. Some children stutter only in the presence of strangers, others only in the presence of their parents, while still others, only when called upon to speak in public.

Davis (1939), in a study of the extemporaneous speech of children two to five years of age, found repetition of syllables, words, and phrases among all the groups. Even though the amount of repetition varies from child to child, she concluded that repetition is part of the speech pattern of all children. As children grow older, there is a decrease in the amount of repetition. In an attempt to explain the causes of repetition, Davis (1940) reported that the cause must be sought elsewhere than in the area of language maturity. She found no evidence to show that a child repeats because he is not adept at using language in the conventional manner.

In a discussion of the effects of stuttering, Cooper (1942) raises the

question as to whether stuttering is a symptom of a particular personality pattern or whether the personality pattern is the result of the child's reaction to his stuttering. She is of the opinion, based on her studies of stutterers in a child guidance clinic, that "the same components responsible for stuttering may also be responsible for the personality pattern rather than the speech defect per se."

d. Stammering. This is a "deadlocking" of speech in which the individual is unable to produce sounds, owing to the tightening of the vocal muscles. Like stuttering, it is caused by emotional tension, and its severity differs at different times, depending on how much emotional tension is present. Generally it accompanies stuttering and results in a temporary blocking of a word, followed, as the muscular tension is released, by a flood of words which, in turn, will soon be checked by another spasm of stammering.

Sex Differences. Sex differences in speech defects show a ratio of 2 to 1 in favor of boys. That means that, on the average, twice as many boys suffer from speech defects as do girls. Stuttering and stammering are much more frequent among boys than among girls. Likewise, slurring, especially when it develops for the first time during late childhood, more frequently occurs in boys than in girls. Lisping is the only one of the four common speech defects that occurs more often in girls than in boys.

Seriousness of Defects. The seriousness of speech defects is not limited to the fact that each year they are allowed to continue makes it increasingly difficult to correct them. In addition to that is the social significance of the defects. Other children are intolerant of any defect in speech and are apt to make fun of one who is afflicted. It is not at all an uncommon thing for boys or girls to laugh at classmates who stutter, stammer, or lisp when they attempt to recite in class or when they talk to others during play. This ridicule soon develops a shyness and a feeling of inferiority on the part of the afflicted child, resulting in withdrawal from the group. The child who suffers from a speech defect is thus deprived of the training in social behavior which is so essential for successful adjustments in mature life. Boys and girls with speech defects rarely become leaders in high-school or college activities, nor do they rise to the top of their classes in scholastic work.

THE CONTENT OF SPEECH

What children talk about at different ages is important not only because it gives evidence as to the size of the child's vocabulary and ability to combine words into sentences at different ages but also because it gives a clue as to the personality and the dominant interests of the child.

At first, the young child's speech generally accompanies *motor activity*. Running, playing, eating, and bathing all have some vocal accompaniment, whether shouts, grunts, squeaks, or words. All of these have a definite relationship to what the child is doing and are in reality a form of "thinking out loud." The little girl playing with her doll will say, "I cover dolly," as she puts a cover over the doll, even though there is no one in the room to listen to what she is saying. Smith (1926) holds that very little of the speech of a young child is conversational but rather approaches monologue in the form of a running commentary on his own actions.

Shirley (1933*a*), from an analysis of the conversations of young children, concluded that children differ in their need for speech as well as in the uses to which they put it. What each child talks about and what is his manner of expressing himself are in general, she maintained, compatible with his other personality traits. "The pattern of personality," she concluded, "is clearly woven in the fabric of speech in early childhood."

In a preschool group that they studied, Jersild and Ritzman (1938) noted there was an increase in the quantity of speech as the children grew older. They talk more as they grow older and boys, as a rule, talk less than girls. The increase with age in amount of talking, they found, is larger than the increase in the vocabulary used while talking. Children of forty-two to forty-seven months of age, for example, spoke between four and five times as much in the 3 hours they were observed in nursery school as did those of twenty-four to twenty-nine months; but they used only slightly more than three times as many different words as did the younger children.

Types of Speech. A number of studies of the conversations of children at different ages have been made. Most of these consist of a careful record of what the children say at times when they are not aware of being observed. In early childhood, conversations relate for the most part to the child and his interests, while relatively few are devoted to topics in which the child is not involved.

Piaget (1926) analyzed the spontaneous speech of children when with their companions and classified it in two categories: *egocentric speech* and *socialized speech*. In the former, the child either talks for himself or for the pleasure of associating with anyone who happens to be present, but it has no social function. This type of speech is seen in monologues accompanying action and in soliloquies, occurring when the child is alone or with others who are paying no particular attention to him. Piaget found that, between the ages of three and five years, more than one-half of the child's speech was egocentric; from five to seven years, approxi-

mately 45 per cent; and for two boys, seven years of age, approximately 30 per cent was of this type.

The second type, *socialized speech*, occurs when social contacts are established between the child and his social environment. Socialized speech Piaget subdivided into five forms: (1) *adapted information*, in which thoughts or ideas are exchanged or a common aim may be pursued; (2) *criticism*, involving the child's remarks about the work or behavior of others, and specified in relation to an audience; (3) *commands*, *requests*, and *threats;* (4) *questions;* and (5) *answers* made to real questions.

Studies of larger groups of children than Piaget used have shown that, while young children's speech is *egocentric*, it is not so predominantly so as Piaget's results indicated. In a functional analysis of the speech of 140 preschool children, McCarthy (1929) found only about 10 per cent of the responses were egocentric. The peak of this sort of response occurred at the ages of twenty-four and thirty months. Criticism, dramatic imitation, and questions and answers were less predominant at the early part of childhood but showed a marked tendency to increase with age. Sanford (1942) maintains that the use of personal pronouns in the child's conversation is an index of his egocentrism.

Rugg, Krueger, and Sondergaard (1929), in a study of the conversations of kindergarten children, came to the conclusion that the child of that age is essentially a self-assertive individual and is a linguistic experimentalist. The types of conversation that revealed self-assertive traits were listed as commands (14 per cent); expressions of personal power (6.8 per cent); attempts to interject themselves into group situations (4 per cent); and also contradictions, display of personal effects, defense of one's feeling of ownership, resistance to interference, and threats. Evidences of the child's experimenting are seen in the fact that he enjoys rhythmic groups of sounds, he repeats sounds and words heard, and he plays with rhymes.

While Fisher (1934) noted a high proportion of remarks about the self up to five years, there was also an increase in remarks about other persons and about objects. Girls talked more about other persons than boys did. Fisher found no connection between the degree of the child's intelligence and his interest in others, as indicated by talking about them.

James (1943) investigated the language of preschool children during play and found that considerably more language was devoted to social manipulation than to egocentric remarks. Children of this age, he commented, show much more tendency to evoke a response in their hearers than to verbalize for the sake of doing so. Very young children, eighteen to thirty-six months of age, in certain forms of play used more egocentric language than language devoted to social manipulation.

Social indexes in the language of preschool children have been studied by Young (1942). Exclamatory words (all emotionally toned in a high degree) had an incidence of 10.1 per subject per hour, with boys speaking more in exclamatory terms than did girls. "Yes" and "no," with their substitutes, "uh-huh," "yeah," and "nope," occurred showing respective frequencies of 3.0 and 2.8 responses per hour per child. "Not" and "n't" were used 8.3 times per hour per subject.

How the size of the group affects the young child's speech was investigated by Williams and Mattson (1942) in the case of nursery-school children. They noted that, as the group became larger, the language used by the children became more sociable and less egocentric. There was also slightly more criticism. There were no commands when the children were alone or with an adult—only when other children were present. This was true also of answers to questions. There were more questions when one child was with an adult than in any other social situation studied. There was a considerable amount of monologue and dual monologue, even when several children were in a group together. When two children and an adult were together, there was more talking, with more words per sentence and more "friendly intercourse" than were noted in any other size group studied. Small social groupings, Williams and Mattson maintained, are most favorable for the verbal language of young children.

In time-sampling studies of young children, Arrington (1939) noted a marked increase in the proportion of social language to total language between the ages of two and six years. The proportion increased from one-third in the younger nursery-school group to two-thirds in the older nursery-school group, and to more than four-fifths in the kindergarten group. "Clearly," Arrington pointed out, "the tendency is for children to talk more to other people and less to themselves as they grow older." The gradual disappearance of talking out loud without regard to the presence of an audience reflects partly the normal increase in the acquisition of linguistic ability and partly the impact of cultural mores on the child.

Speech to adults decreased from 44 per cent of the total for the younger nursery-school group to 5 per cent for the first-grade group. In all except the young group of nursery-school children, boys talked predominantly to boys and girls to girls. The predominance of speech to children of the same sex, Arrington noted, is especially marked in the kindergarten and first-grade groups. Speech to other children increased with age. In the younger nursery-school group, children talked to other children in about 4 per cent of the time they were observed, as compared with 12 per cent for the older nursery-school group, 22 per cent for kinder-

garten boys, and 17 per cent for kindergarten girls. The number of children addressed likewise increased with age from 1.46 to 3.01, on the average.

Criticism. Criticism is generally associated with the later childhood years and early adolescence. Few people think of younger children as being critical of others in their speech. The study made by Smith (1932), in which 20,000 sentences spoken by children two to six years of age were analyzed, is interesting because it throws light on the subject. Less than 2 per cent of these statements were criticisms, the number increasing as the children grew older. An analysis of the critical statements showed that only a small proportion of them (about 11 per cent) were favorable. Most of the favorable criticisms, such as comments on clothes and possessions, were directed toward the person concerned, while many of the unfavorable ones were spoken behind the backs of the persons criticized.

The purpose of unfavorable criticism differed with age. Among the youngest children, it was to gain the assistance of some other person in a situation that was beyond their control and thus took the form of *tattling*. As the child grew older, the percentage of criticisms addressed to the person criticized increased. Beginning at the age of three years, children started *name calling*, directed at a person, to relieve injured feelings. Typical examples of this were "You're a crazy cat," "You're a lazybones," or "You're silly." Name calling was found not only to increase in usage with age but to contain a wider range of adjectives in the criticisms of friends and companions.

In the case of children under five, Smith found that the greatest proportion of criticism was directed at interference with themselves or their possessions. This acted as a type of complaint, as, "He wont let me play" or "You're spoiling my game." Older children used criticism mainly to comment on the conduct and personalities of others—for example, another's lack of knowledge or skill or failure to produce a satisfactory result. These criticisms were sometimes made to the child himself in the hope of correcting his error, but they were mostly for the satisfaction of demonstrating the speaker's superiority.

Conversational Topics. What children talk about when they are together or when they are with adults has been the subject of numerous investigations. The most frequent topic of conversation that nursery-school children engaged in, Sprague (1929) noted, related to themselves and their activities. When a second person was the subject of a remark, the remark was usually a command for that person to do something. Murphy's (1937) observations of the conversations of preschool children led her to conclude that, at the age of three years, many topics of con-

versation characteristic of adults in our society appear in a rudimentary form in the conversations of children. Topics such as clothes, likes and dislikes among people, where one lives, and matters of everyday routine predominate.

Home Interests. Preschool children devote nearly one-third of their words and expressions to family concepts, related to mother, father, sibling, and home. Shirley (1938) reported that emotional references to the family are very frequent and show the child's feeling of insecurity, as when a two-year-old boy called "mammie" and showed no interest in play with other children, and five-year-olds asked, "When is my mother coming?" or said, "I wish my mother would hurry up and come." This is a form of *socialized speech*, as Piaget described it, because through speech the child is establishing contact with the group. In addition to emotional references to the family, Shirley reported that the children referred to their parents in a variety of other ways, as provider, disciplinarian, a person providing routine care or recreation (with mention of the father's work); or as furnishing an alibi for some act on their own part. These references, on the whole, were found to be free from emotional undercurrent.

Furthermore, the children referred to their siblings, but in only about four different ways. The most common type of reference proved to be matter-of-fact informative statements, as "Betty's at school" or "Junior's birthday is in June." They also referred to their siblings in affectionate or protective ways or spoke of the misdemeanors and possessions of their siblings. "Home" was referred to in only two ways, in addition to its emotional usage, as a place where one keeps one's possessions and as a place to which one returns.

Conversations of Older Children. Relatively few investigations of the conversational topics of older children have been made, not because of lack of interest in the subject but because of the practical difficulty of recording what the child has to say. The few studies that have been made, up to the present, have been carried on in school during recess or other free periods, when children can talk freely about any subjects that may be of interest to them at the moment. Because the settings are those of the schoolroom, this fact is bound to have some influence on the trend of the conversations.

The spontaneous conversations of third-grade children were recorded and analyzed by Zyve (1927), who found the most popular topics to be home play; animals; school activities; special subjects, such as trees, mumps, ships, etc.; and motor trips and picnics. Dawson (1937) carried out an experiment similar to that of Zyve, except that the subjects

included children in grades 3 through 6. The first 10 most popular topics at each grade are listed below in order of decreasing rank.

Grade 3

1. Games and sports
2. Personal experiences
3. Pets and their tricks
4. Trips
5. Family and friends
6. Accidents
7. Parties
8. Accomplishments (boasting)
9. School
10. Shows and programs

Grade 4

1. Trips
2. Games and sports
3. Personal experiences
4. Family and friends
5. Accidents
6. Pets and their tricks
7. Thoughts and dreams
8. School
9. Shows and programs
10. Nature

Grade 5

1. Games and sports
2. Pets and their tricks
3.5 Personal experiences
3.5 Trips
5. School
6.5 Family and friends
6.5 Accomplishments (boasting)
8. Parties
9. Wild life
10. Current events

Grade 6

1. Games and sports
2. Personal experiences
3. School
4. Pets and their tricks
5. Trips
6. Accidents
7. Parties
8.5 Family and friends
8.5 Current events
10. Shows and programs
10. Rides by vehicle
10. Cooking and sewing

(p. 434)

In general, it may be seen from the above data, children tend to discuss most frequently active types of experiences, as sports, personal experiences, trips, pets and their tricks, and accidents. The younger children were found to be more general in their interests than the older, while the older concentrated more on a smaller number of topics. At all ages, sports such as baseball and currently played games were popular conversational topics. The topics that rank high and low in one grade were found to be correspondingly high or low in other grades. As children grew older, they talked less and less about their families and friends and more about school.

Boasting. Every child likes to boast. What he boasts about, however, changes with age. Young children boast about material possessions, such as clothes, toys, family cars, or servants. The older child boasts more about the strength and skill in games than about his material possessions. Hetzer (1930) studied boasting in different age groups and found that the greatest amount occurred between the ages of eight and twelve years. Boys of this age, she found, boast about their strength as a part of their normal talk.

Domination of Conversations. Even before he can talk, the baby attempts to join the conversation of others by *babbling,* often in such loud tones that he cannot be ignored. Later, when he has learned to talk, he attempts to dominate the conversation by talking faster and in louder tones than anyone else, thus making it impossible for others to "get a word in edgewise." Very often, the young child's questions are not motivated by a desire for information but by a desire for attention. He discovers that, when he makes statements of fact, he gets less attention than when he asks questions. He even asks the same question time after time and pays little attention to the answer given, because he already knows what it is.

DELAYED SPEECH

The normal child should begin to talk when he is about fifteen months old. If, by the time the child is two years old, he is not talking, there is need for investigation to discover the cause. The most common causes of delayed speech or speech below the standard for a child of a given age are the following:

1. Intelligence. In babies of normal intelligence, first speech appears, according to Mead (1913), at an average age of 15.8 months, compared with 34.44 months in the case of the feebleminded. Terman (1925) reports the average age for the first word in the case of gifted children to be 11.74 months for boys and 11.01 months for girls. The size of vocabulary at every age depends so much upon the intellectual development of the individual that many psychologists believe one of the best single tests of intelligence is a vocabulary test.

Shirley (1933) gave correlations of between .63 and .76 for various linguistic measures and mental-test results. Williams (1937) reported correlations of from .12 to .75 for various measures of language development and M.A. in a group of preschool children. According to Irwin (1942), low-grade feebleminded children with an average age of five years are comparable in speech sound status to babies a year and a half old.

2. Social Environment. Studies of the relationship between speech and social environment have shown that children of the poorer social environments are delayed in speech development, as compared with children of the better social environments. This may be due to differences in intelligence or to opportunities to learn, or to both. Day (1932), Van Alstyne (1929), and Davis (1937*b*) all found better language development for children whose parents are in the higher occupational classification than for those whose parents' occupations ranked lower.

Van Alstyne attempted to relate language growth to more specific factors in the environment. The factors she found correlated with

vocabulary were the number of children's books that the child sees, opportunities for constructive play materials, the number of hours the child is read to or told stories, the number of adults in daily contact with the child, and the number of playmates.

Skeels *et al.* (1938), in a study of orphanage children, noted that there may be extreme language retardation in a barren language environment. The factors correlated with good language development, as given in Van Alstyne's (1929) study, are notably absent in the orphanage environment. Orphanage babies, Brodbeck and Irwin (1946) found, vocalize less frequently and make fewer different sounds than do family babies. Even when the family babies of the unskilled occupational groups were compared with those from the orphanage, the difference was almost as great as when they were compared with the professional group.

Hetzer and Reindorf (1928) studied two groups of young children, nine to thirty months old, in day nurseries, one of which was in a good neighborhood and the other in a poor one. They found that when the children's vocalization was purely "instinctive," as in crying, no difference between the two social classes was apparent. But, in all other forms of verbal activity, the children of the laboring class lagged behind those of the better group. The degree of retardation was especially apparent in the size of vocabulary, in which the children of the poorer group lagged from 9 to 12 months behind those of the better group. In sentence usage, there was a 4 months' retardation, and in first use of different parts of speech, a 6 months' retardation.

In a comprehensive analysis of the behavior of kindergarten children, half of whom came from good, and half from poor environments, Gesell and Lord (1927) found that the outstanding difference between the groups was the amount of conversation used by the children. Spontaneity and expressiveness were almost lacking in the group from the poorer neighborhood but were in constant evidence in the group from the better environment. The children of the poorer group shouted and laughed during the free-play period, but with few exceptions they did not talk to one another or to the group as a whole. Articulation of children from the upper occupational groups is superior to that of the lower occupational groups (Davis, 1937*b*).

3. Illness. Should severe or prolonged illness occur in childhood, the child is cut off from contacts with other children and, as a result, his speech development suffers. Added to this is the fact that he has little incentive to talk because he is not feeling well or because what he wants is done for him and his every desire is anticipated.

The effect of severe illness during the first two years of life on the speech development of a group of children has been studied by Smith

(1931). Comparisons were made with a control group made up of children who had not suffered from serious illnesses during the first years of life. In the case of the control group, the average age at which the child first spoke words was 10.261 months, while in the case of the sick group, it was 11.126 months. Phrases were first used by the control group at the age of 14.487 months and by the sick group at 16.450 months.

4. Inadequate or Defective Model. Many children of average or superior intelligence are slow in starting to talk and have vocabularies more limited in size than one would expect them to have. This often occurs in the case of institutional children, children brought up by foreign nurses who are themselves handicapped by lack of knowledge of the English language, or children who are segregated from other children, as is often true in the case of children of very wealthy parents.

Because the child learns to speak by imitation and because he copies the model of speech of those with whom he is most frequently associated, it is quite understandable that he cannot learn to speak better than those who serve as his models. Even when the little child has, from the adult point of view, a good model to copy, it may happen that the adult speaks too rapidly for the child to understand, and this makes imitation impossible.

5. Negativism. Many young children, on the threshold of learning to talk, develop a rebellious attitude toward talking because they have been forced to talk before they are ready to do so. Too much urging or coaxing thus results in antagonism toward talking, with the result that the young child stubbornly refuses to speak, though he is able to do so. Even after a child has learned to talk fairly well, he may develop a negative attitude toward speech because of fear of being laughed at or because his babyish pronunciation is regarded as "cute" and he is urged to repeat words for the amusement of adults.

6. Deafness. A young child who is deaf or hard-of-hearing is certain to be slow in leaning to talk and to have a poor pronunciation compared with other children of the same age and intellectual development. Likewise, the deaf child will, at every age, have a smaller vocabulary than other children. The reason for this is obvious. Because the child learns to talk through imitation, he is greatly handicapped if he cannot hear what others say, and as a result, he lacks an adequate model to imitate.

7. Sex. Irwin and Chen (1946) recorded the spontaneously uttered speech sounds of 95 babies ranging in age from one to thirty months. They noted that, while the two sexes produced sounds of much the same type during the first year, the girls tended to exceed the boys during and after the second year in the mastery of the types of sounds used in the English language.

Children of the male sex are, on the average, slower in learning to talk than children of the female sex. Girls have been found to talk slightly sooner than boys of the same intellectual level and to have a larger vocabulary. Boys of normal intelligence, Mead (1913) reports, begin to talk first at an average age of 15.76 months and girls at 14.88 months. McCarthy (1930) found that girls were superior to boys in the mean length of response made and that, at the age of eighteen months, only 14 per cent of the boys' responses were comprehensible as compared with 38 per cent of the girls. This difference persists as children grow older. Vocabulary tests show girls to be superior to boys at every age. Likewise, fewer grammatical mistakes are made by girls than by boys. McCarthy also found a large difference in favor of girls in comprehensibility of speech, especially at the earlier age levels. In nearly all reports on the incidence of speech disorders, there is evidence to show that such defects occur more frequently among boys than among girls.

8. Multiple Births. Studies of twins have shown that they, as a rule, learn to talk more slowly than single children, because each imitates the speech of the other and consequently does not have as good a model to copy as if imitating an older child or an adult. Day (1932, 1932*a*) contrasted the speech development of twins with that of singletons and found that in the size of vocabulary, mean length of sentence, and articulation, twins were retarded as contrasted with singletons of the same age. They also started to talk on an average of one month later. Retardation in speech development on the part of twins increased from two to five years of age, but by the age of nine, they had partially overcome their language handicap, if they came from homes in the upper occupational groups. Only children, on the other hand, were found to be definitely superior to children with siblings in every phase of linguistic skill (Davis, 1937*b*).

Parents of triplets reported to Howard (1946) that their triplets said their first words later than the single-born children in the family. "Secret language," which is observed in many pairs of twins, was observed in 42 per cent of the triplets of Howard's study. In the language tests given to the preschool triplets, Howard found that, in size of vocabulary and in structural and functional analysis, the triplets were inferior to the single-born children. By the school age the tests showed the triplets to be more nearly like single children in their language ability.

9. Bilingual Speech. Because of the commonly accepted belief that it is easier to learn to "talk like a native" in a foreign language before one is five years old rather than later, many parents have their children taught some preferred foreign language while they are learning their native tongue. This is very apt to delay the child's learning to speak, because of the confusion that results when the child tries to say one thing

to one person in his native tongue and the very same thing to another person in a foreign language. His thinking, likewise, is apt to be confused, and he is therefore self-conscious about talking, because he is not quite certain about the correct word to use on that particular occasion.

Learning two languages simultaneously necessitates the learning of two words for every object the child wishes to name or every thought he wishes to express. It also requires the learning of two sets of grammatical forms, one generally in direct conflict with the other. This is no easy task for a high-school student, so it is readily understandable that it is an extremely difficult task for a young child. Smith's (1935*a*) study of eight children of the same family, who used both English and Chinese, revealed that the children used sentences in which words of both languages were mixed together and that many errors occurred. With increases in age, the mixed sentences and errors decreased.

In a later study, Smith (1939) analyzed the speech of children born in Hawaii who came from non-English-speaking ancestry, such as Chinese, Filipino, and Hawaiian. She found marked retardation in their speech at the time of entrance into school, owing to the prevalent use of pidgin English and bilingualism in their homes. When there are older brothers and sisters, they help the child to use more but not better English.

CHAPTER VIII

EMOTIONAL DEVELOPMENT

Beginning with the undifferentiated type of emotional responses that have been found by recent experimental studies to exist at birth and shortly afterward, the young child develops certain emotional patterns which may readily be recognized in his behavior. Before the end of the first year, his emotional expressions are so clear-cut and definite that they are easy to interpret, and thus it is possible to know, in a more or less specific way, what the child's thoughts and feelings are, even though he is still too young to talk in an understandable fashion.

As the child becomes older, he displays an increasing repertoire of emotional responses, recognizable to adults as *joy, anger, fear, jealousy,* and *hate*. These forms of emotional behavior can be aroused by a wide range of stimuli, including objects, people, and situations which were originally ineffective. What, then, causes this emotional development and what evidence have we to show to what extent one factor rather than another plays an important role in its development?

HOW THE EMOTIONS DEVELOP

Emotional development is due to *maturation and learning*, not to either one alone. The fact that a certain emotional reaction does not appear early in life is no proof that it is not innate. It may develop later with the maturing of the intelligence of the child, which results in keener perceptions and an increased capacity to distinguish between persons, objects, and situations. This causes the child to react in different ways to the same stimulus at different ages.

Emotional reactions may also come from the increased activity of certain of the endocrine glands which have been relatively inactive since birth. Through learning, objects and situations, which at first failed to call forth emotional responses, later come to do so as a result of conditioning, or learning by association. Learning and maturation are so closely interwoven that it is at times difficult to determine the relative effects of the two.

1. Role of Maturation. Experimental studies of the role played by maturation in the development of the emotional life of the child have been limited to the early years of childhood. Evidence obtained from

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these studies, however, is adequate to show how important maturation is, especially as the child's emotions are already in a well-developed form by the time he enters school.

The most satisfactory scientific method of discovering the importance of maturation consists of isolating the child from social stimulation immediately after birth. Then, at certain specified times, the child's reactions to stimuli which, under normal conditions, are known to call forth emotional reactions would be observed. Should the child show emotional reactions similar to those displayed by other children of the same age and intellectual level, it would be positive proof that the emotion had developed naturally. Lack of emotional reaction, on the other hand, would show the importance of learning.

Carrying out an experiment of this type would, for obvious reasons, be impossible. Hence, the scientific study of a deaf and blind girl, made by Goodenough (1932), is of great value because of the light it sheds on this problem. Goodenough took moving pictures of the emotional reactions of a ten-year-old girl who had been blind and deaf from birth. The girl showed joy, resentment, temper tantrums, timidity, and other emotions similar to those of normal children in spite of the fact that, because of her handicaps, she had had no opportunity to learn them. This, Goodenough pointed out, would suggest that the overt characteristics of the emotions were obviously unlearned.

Gesell (1929) has used the isolation technique to study the role played by maturation in the emotional development of a baby who was confined in a small enclosed space, 2 by 3 by 4 feet, well ventilated, illuminated, and completely harmless. At the age of ten weeks, the baby accepted the situation with complete complacence. At twenty weeks of age, he showed mild intolerance, dissatisfaction, and apprehension, while at thirty weeks of age, his intolerance was vigorously expressed by crying. This led Gesell to conclude that the genetic graduation of fear behavior thus displayed was based upon maturational sequence rather than upon conditioning.

Genetic Sequence in Emotions. Genetic studies of groups of babies and young children have revealed a patterned sequence in emotional development similar in its major aspects for all members of the groups. From data obtained from observations made by parents, specially trained for this, Blatz, Bott, and Millichamp (1935) found a genetic sequence for 18 emotional responses in the case of five children ranging in age from one month to two years. Each type of emotional response seemed to appear at a particular period, and with increasing age there was a continual change in the form the response took.

In the table below, the ages at which specific emotional responses appeared are listed. The blank spaces at succeeding age levels indicate that the response, which appeared earlier, continued to appear. For example, crying and screaming appeared first from one to four months

TABLE XXVIII. ORDER OF APPEARANCE OF FORMS OF BEHAVIOR DURING EMOTIONAL EPISODES FOR ALL FIVE CHILDREN

1 to 4 months	4 to 8 months	8 to 12 months	12 to 16 months	16 to 20 months	20 to 24 months
Crying Screaming Restless Struggling Starting					
	Refusing and resisting Holding out arms Throwing things Crying and calling				
		Stiffening Throwing self back Clinging Crying and attempting			
			Running away		
				Hiding face Crying and saying "no"	
					Slumping crying and asking

Source: BLATZ, W. E., BOTT, E. A., and MILLICHAMP, D. A. *The development of emotion in the infant.* Toronto: Univ. Toronto Press, 1935, Child Development Series, No. 4, p. 19. Used by permission.

but continued for the remainder of the study. Running away began at the twelve-to sixteen-month period. Only unpleasant emotional responses are listed, not because the children studied were devoid of pleasant emotional experience, but, as the authors explain, the parents perhaps regarded smiling, laughing, and other indications of pleasure as not being emotional.

A glance at the table will show that with age, emotional responses are less diffuse, random, and undifferentiated. They become more specialized and directed toward the situation in which they occur as the child grows older. For example, crying and screaming are apparent early in the child's emotional behavior, as may be seen by the fact that they occur in the one- to four-month period. Crying and saying "no," on the other hand, do not occur until much later, in the sixteen- to twenty-month period.

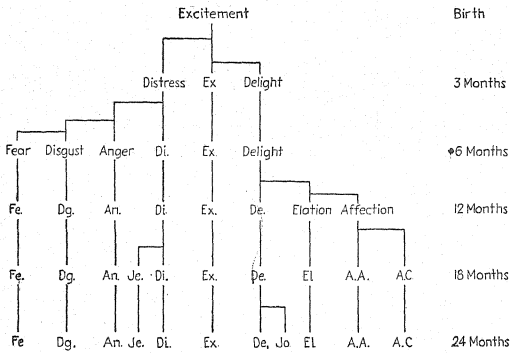

FIG. 49. Showing the approximate ages of differentiation of the various emotions during the first two years of life. [Key: *A.A.* = affection for adults, *A.C.* = affection for children, *An.* = anger, *De.* = delight, *Dg.* = disgust, *Di.* = distress, *El.* = elation, *Ex.* = excitement, *Fe.* = fear, *Je.* = jealousy, *Jo.* = joy.] (*From K. M. B. Bridges, Emotional development in early infancy. Child Develpm.*, 1932, **3**. *Used by permission.*)

In a similar study in which large groups of foundling-home children were observed, Bridges (1932) noted a genetic sequence in emotional development. Beginning with undifferentiated excitement, present at birth, she concluded that all emotional responses are derived as a result of maturation and conditioning. These are general and poorly organized at first but, with time, take on a more definite form. In the accompanying figure, Fig. 49, are given the emotions that, according to Bridges, are evolved from undifferentiated excitement and the approximate ages at which each appears.

According to this, distress appears first at the end of the first month, delight by the end of the second month, and affection around the eighth month. The last emotion is then differentiated into affection for adults and affection for children between the thirteenth and fourteenth months.

Emotional development does not stop at twenty-four months of age, the highest level given by Bridges. True grief, which involves an understanding of the situation and the ability to imagine oneself in the position of the individual who is experiencing the grief, is a more highly developed emotional reaction than "distress," as given by Bridges, and develops much later than at the age of two years.

Genetic Development of Fear and Crying. Several scientific investigations have been carried out to determine whether specific emotional responses follow a genetic pattern in their development. In a study of fear reactions, Jones and Jones (1928) asked children and adults to handle a harmless snake, nearly 6 feet long, which glided about actively and frequently protruded a black forked tongue. Up to two years of age, they found no fear in the children studied. By 3½ years, on the other hand, caution about approaching and touching the snake appeared, while, at the same time, the children seemed to pay greater attention to the snake than before. After four years of age, definite fear appeared.

As Jones and Jones claimed that the children could not have learned their fears through actual contact with the snake, pictures, or stories, it is evident that maturation was primarily responsible for the changed reactions. General physical and intellectual development, with consequent sensitiveness to certain aspects of their environment, plus a keener perception which caused the child to be startled by new and unusual things he could now recognize as such, were primarily responsible for the change. "Fear," they contend, "arises when we know enough to recognize the potential danger in a stimulus, but have not advanced to the point of a complete comprehension and control of the changing situation."

Daily observations by Bridges (1931) of the emotional behavior of nursery-school children over a period of three years showed that at first fear is general, more like a state of panic than specific in form. As the child grows older, however, fear responses become more specific. The child runs away, avoids situations which frighten him, withdraws partially, or holds himself aloof. Likewise, with increasing age, there is an increase in the use of linguistic responses accompanying fear, like "Take it away," "I don't want to go," and "It will bite me," in place of the crying which typically accompanied fear in younger children.

Bayley (1932) studied the crying of babies in connection with their monthly physical and mental examinations. In Table XXIX are given in percentages the frequency of the different causes of crying for the first twelve months of life.

It is apparent from this table that some causes of crying are outgrown and others acquired with age. In the early months of life, crying comes mostly from internal, organic causes like hunger, bodily pain, and distress.

Later, it is aroused primarily by environmental causes, such as strangeness of the situation or dislike of unusual handling. This is the result of the intellectual development on the baby's part. Fear in strange situations increases as sensitivity to situations recognized as being strange increases.

2. Role of Learning. The child is not born with innate emotional responses to any specific stimulus but learns to respond emotionally as a result of his experiences. He has, for example, no innate fears of a specific

TABLE XXIX. THE RELATIVE OCCURRENCE OF CRYING AT EACH MONTH

Causes	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
	Percentage of all causes											
Specific test situation	27.3	38.6	28.0	30.0	35.1	33.7	36.8	33.0	27.9	28.8	29.4	33.0
Handling	25.5	10.8	14.0	16.0	14.9	14.9	17.2	13.2	19.8	20.7	20.6	19.4
Fatigue	20.0	30.1	21.5	23.0	14.0	13.9	6.9	7.5	10.8	9.0	4.9	8.7
Internal conditions	5.5	3.6	4.3	0.0	3.5	2.0	6.9	5.7	3.6	1.8	3.9	1.0
Colic	12.7	4.8	6.5	2.0	2.6	2.0	0.0	1.9	0.0	0.0	0.0	0.0
Sleepiness	1.8	1.2	2.2	4.0	7.0	4.0	4.6	7.5	8.1	6.3	5.9	2.9
Hunger	3.6	2.4	5.4	9.0	2.6	3.0	2.3	2.8	0.9	0.9	2.0	3.9
Strangeness	0.0	0.0	2.2	5.0	11.4	9.9	14.9	17.0	21.6	26.1	24.5	21.4
"Spoiled"	3.6	4.8	5.4	6.0	5.3	7.9	9.2	9.4	5.4	3.6	5.9	6.8
Put down	0.0	1.2	7.5	3.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Interference	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Postural discomfort	0.0	2.4	3.2	2.0	3.5	5.0	1.1	1.9	1.8	1.8	1.0	1.0
Adverse conditioning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.0	1.9

Source: BAYLEY, N. Study of the crying of infants during mental and physical tests. *J. genet. Psychol.*, 1932, **40**, 321. Used by permission.

thing, such as fear of the dark or of high places. The maturation of his sensorimotor and intellectual abilities, which underlie his emotional behavior, results in an increased receptivity to the environment. Thus, in turn, the child becomes increasingly more susceptible to emotional stimulation by particular objects and situations. Through learning, objects and situations, which at first failed to call forth emotional responses, later came to do so as a result of conditioning or learning by association.

Conditioning. The famous experiment on "Albert" by Watson and Raynor (1920) demonstrates how a baby learns to be afraid. Albert, at nine months of age, was shown a large number of objects, a rabbit, dog, monkey, white rat, and cotton wool. In no instance did he display fear. Later, he was conditioned to fear the white rat in the following manner. When the rat was first presented to Albert, he reached for it. At that

moment, a loud noise was produced by striking a steel bar with a hammer behind the child's head. This resulted in a startled response on Albert's part and he fell forward on his face. The next time, when the loud noise accompanied the presentation of the white rat, he whimpered. After five more presentations of the rat and the noise, the rat was presented alone. Albert cried, withdrew, and showed a typical fear response. He had thus learned by association, or by conditioning, to fear an object that originally aroused no fear response.

Carrying the experiment further, Watson and Raynor found that Albert's fear of the rat had spread to similar objects, such as a rabbit, dog, sealskin coat, and cotton wool, all of which had been shown to Albert before the conditioning experiment started, and for which he showed no fear whatsoever. It was thus apparent that fear of specific objects and situations had come about by transfer from similar objects and situations and was learned just as the fear of the rat had been learned.

How fears of certain specific events lead to fears of similar or associated events has been investigated by Jersild and Holmes (1935*b*, pp. 138–139). From the testimony of parents regarding the fears of their children, they found the following fears as derived from earlier fears:

Description of Prior Fear or Situation in Response to Which Fear Was Exhibited	Fear Described as Growing Out of the Prior Fear
1. Fright at sound of applause on radio	1. Fear of all radios
2. Sound of mouse running through bedroom	2. Fear of all "scratchy" sounds at night
3. Warned to shut cellar door "or a rat will come out and bite you"	3. Fear later exhibited when someone said, "That's a rat," when she was playing with a familiar toy rubber rat
4. Fear of mice and cockroaches after seeing signs of fright in parents	4. Fear of cracks after hearing that cockroaches live in cracks
5. Fright at sudden hooting of owl at zoo	5. Fear of familiar pet canary (not previously feared) following this incident
6. Startled by moving feathers	6. Fear of moving seaweed
7. Fear of bunch of black pansies at age of five months	7. Subsequent fear of all black objects
8. Moving balloon manikins	8. Fear of pictures of similar manikins
9. Balloon used for anesthetics during operation	9. Fear of all balloons or objects resembling balloons, including dirigibles in the sky and a spirometer
10. Elevators	10. Being shut in small space
11. Frightened when first saw narrow winding stairs in new house	11. Fear of all stairs for some time thereafter
12. Fright when attacked by police dog and subsequent fear of dogs	12. Fear of cats
13. Fear of a child wearing mask and staring through window	13. Fear of other masks, skulls, skeletons, and pictures of these

Description of Prior Fear or Situation in Response to Which Fear Was Exhibited	Fear Described as Growing Out of the Prior Fear
14. Old, wrinkled people	14. Fear that mother will die
15. Grandfather moves to strange new place	15. Fear that grandmother will move away and not come back
16. Fear at sight of man with legs amputated	16. Fear of crossing streets (danger of being run over, losing own legs)
17. Frightened when left alone in hospital	17. Fear of dark, fear of imaginary animals, and nightmares concerning animals
18. Fright when cat was caught in cellar fire	18. Fear for safety of cat in other situations
19. Fear of crossing streets after being hurt by car	19. Nightmares involving traffic accidents, fear of the dark following nightmares, and fear of being alone in room
20. Doctors and hospitals	20. Telephones and taxis (fear that they will be used to summon doctor or go to hospital)
21. Fear of nightmares	21. Fear of mosquitoes (result of identifying Russian word for "nightmares" with word for "mosquitoes")
22. Nightmares	22. Fear of the dark
23. Dreams about creature emerging from clock in hallway of child's home	23. Fear of same clock during the day
24. Kidnappers and murderers (beginning when told story about murdered girls)	24. Fear of going out alone
25. "Big Bad Wolf" (after hearing story of Red Riding Hood)	25. Fear of going into cellar "because wolf is there"
26. Death and cemetery	26. Fear when hearing the word "commissary"
27. Death and cemetery	27. Fear of dying (*e.g.*, "Will I die before I finish drinking this milk?")

Imitation. Emotional reactions to certain specific situations can be learned by observing them in others, as well as by conditioning. The child imitates the emotional behavior he observes in adults or children and responds in an emotional manner to situations that at one time were incapable of producing emotional responses. Hagman (1932) studied fear in preschool children and found a real tendency for the child to have fears corresponding to those of the mother. The correlation of the child and mother's fears was .667 (P.E. $\pm$ .045). This he interpreted to mean that the child had learned to fear certain situations by observing the mother's fear in those situations. Dunbar (1944) stresses the effect of the mother's emotional attitude on the young child through what she calls "emotional tension."

How the mother's emotional tension affects a baby or young child has been studied by Escalona (1945) in the case of feeding problems. Even

infants less than four weeks old were found to refuse the breast if the mother was high strung and nervous. When being fed solids, the older babies sometimes violently resisted food when fed under tension, but ate well when fed by a relaxed person. This led Escalona to the conclusion that, when infants and young children are "brought into close contact with an adult, they perceive the emotional state of the adult and respond to it in a consistent manner."

CHARACTERISTICS OF CHILDHOOD EMOTIONALITY

To understand children's emotions, one must realize that they differ to a marked extent from the emotions of an adult. In babyhood, the emotional life is simple and spontaneous. No restraint is placed on the free and instantaneous expression of the emotions. Emotions come and go, their frequency depending partly upon the baby and partly upon his environment. After the emotion has spent itself, it is forgotten, and the baby is free from emotional strain until conditions give rise to a new emotional outburst. The period of unrestrained emotionality is very brief. Modifications of the crude expressions of his emotions come as a result of social interference and demands from the adult world. By the end of adolescence, the child has learned to control and modify his emotional reactions to fit into the pattern approved by his social environment.

The emotions of the young child differ markedly from those of the late adolescent or the adult. An analysis of characteristic features of the child's emotions, contrasted with those of the adult, will make these differences apparent. These characteristics are

1. Children's Emotions Are Brief. Typically the young child's emotions last only a few minutes and then end abruptly. Because the child expresses his emotions in overt actions, he "clears his system," and, as a result, the emotion lasts for a relatively short time as contrasted with the long-drawn-out emotional reactions of the adult. As the child grows older, social restraints on the overt responses which formerly characterized his emotional reactions lead to "moods" or emotional states drawn out over a period of time and expressed slowly rather than in short, abrupt outbursts.

If the child is forced, by social restraints, to check anger or any other emotional reaction that the older members of his environment consider undesirable, the energy thus restrained must expend itself in some way. One of the most effective forms of expression is a long-drawn-out mood, characterized as sulking or bad humor. The typical moods of childhood are sulkiness from restrained anger; "scariness," "jumpiness," and timidity from repressed fear; and happiness or good humor from controlled joy.

When the child is with playmates of his own age, free from parental or other adult restraints, he expresses his emotions freely and quickly. In the presence of adults, however, the child begins to display moodiness around the fourth year, and this tendency reaches its peak during adolescence. Because of this, adolescence is often called the "moody age."

2. Children's Emotions Are Intense. The young child's emotional outbursts are characterized by an intensity which is seldom observed in the emotional reactions of an adult. His emotional responses lack gradations or degrees of intensity, with the result that his response to a trivial situation will call forth an emotional reaction of as great intensity as a situation of a more serious type. To adults, unfamiliar with childish behavior, the intense emotional reactions of a little child to a petty annoyance are the source of great surprise and wonder. This is especially true in the case of fear, anger, and joy, all of which are expressed in pronounced overt responses.

At a very early age, parents attempt to teach their children to control their emotional outbursts. Restraint comes through punishment, criticism, reasoning, or approval, depending upon the child's age and the environment in which he is brought up. The little child soon learns that he will not be permitted to kick, bite, hit, or scream when he is angry or, if he runs and hides when he is frightened, he is apt to be laughed at and called "'fraid cat." Even joy cannot be expressed naturally. The child must learn to control his desire to jump up and down, clap his hands, or shout with glee when things please him.

During late childhood, the child learns that temper tantrums, fears, jealousies, gloating over others, or even too much joy will not be tolerated by his playmates. He thus discovers that, if he wants to be a socially acceptable member of the group, he must keep his feelings and emotions under control and not give way to the intense outbursts which had, earlier in his life, proved to be such an effective method to use when he wanted to gain his wish at home. By the time he reaches the adolescent years, the child has learned that intense emotional reactions are regarded as infantile, and, to win the social approval which he so strongly desires, he makes a real effort to restrain his emotional behavior.

3. Children's Emotions Are Transitory. The transitory character of the young child's emotions which results in a rapid shift from laughter to tears, from anger to smiles, or from jealousy to affection, is incomprehensible to many adults because it is so different from the way in which the typical adult expresses his feelings. The child's behavior, which at one minute is characterized by an intense outburst of one emotion, suddenly shifts to an equally intense outburst of a totally different emotional reaction.

This transitory characteristic of the child's emotional behavior leads many adults to question whether the child feels as deeply as an adult does. The rapid shift from one emotional response to another would suggest that he does not. But this may be due to other causes than shallowness of feeling. Because he expresses his emotions in an unreserved manner, thereby clearing his system of pent-up emotions; because of lack of complete understanding of the situation, owing to his immature intellectual development and limited experiences; and because of a shorter attention span which makes it possible for him to be diverted easily, the little child's emotions swing quickly from one emotional extreme to another. While they last, there is adequate reason to believe, from observations of the child's behavior, that he feels as deeply about the matter, in his own childish way, as the adult does.

4. Children's Emotions Appear Frequently. Children's emotions occur more frequently, on the average, than do those of the typical adult. The reason for this is that as the child grows older, he has greater ability to make adjustments to situations that justifiably call forth emotional reactions than he had when he was younger and less experienced. Because he has learned that social disapproval or punishment often follows an emotional outburst, he tries to meet situations by reactions other than emotional ones. The result is a gradual decrease in the frequency of emotional responses.

5. Children's Emotional Responses Are Different. Observations of children of different ages show wide variability in their emotional responses. Among newborn infants, the patterns of response are similar. Gradually, however, as the influence of learning and environment are felt, the behavior accompanying the different emotions is individualized. One child in fear will run out of the room, another will hide behind his mother's skirt, while still another will stand his ground and cry. The same is true for all other emotional patterns.

Johnson (1936) presented nursery-school children with three carefully controlled laboratory situations designed to be annoying or fear provoking. Marked differences in emotional responses, ranging from caution and timidity to soliciting help from others, were observed. Differences in emotional responses of children to health examinations have been reported by Shirley and Poyntz (1945). Some children cried, some actively resisted, and some tried to withdraw.

6. Emotions Can Be Detected by Symptoms of Behavior. An adult is generally able to hide his feelings and emotions well enough so that it is difficult for others to know just how he feels. Not so with children. Even though they may not show their emotional reactions directly in behavior related to the way they feel, their emotionality can be detected

by tension, restlessness, fidgeting, and other symptoms. An interesting study of the symptoms of children's emotionality was made in England by Cummings (1944), who found the different symptoms and their frequencies as given in Table XXX.

TABLE XXX. INCIDENCE OF SYMPTOMS OF EMOTIONALITY

Item	Percentage Frequency
Excitability, restlessness	28.9
Daydreaming, lack of concentration, laziness	28.9
Generalized anxiety, timidity, or shyness	23.0
Specific fears	22.2
Bladder control, frequency of micturition	21.3
Nervous habits	18.0
Cruelty, aggression	15.1
Speech difficulties	14.2
Lack of appetite, food faddiness	11.3
Babyish behavior, frequent crying	11.3
Lying, stealing	10.1
Tendency to constipation, headache, stomach-ache	9.2
Obstinacy, disobedience	8.8
Bedtime problems	7.1
Undesirable sex habits	6.3
Easily and frequently tired	4.6
Obsession	4.2
Hysterical outbursts	4.2

Source: CUMMINGS, J. D. The incidence of emotional symptoms in school children. *Brit. J. educ. Psychol.*, 1944, **14**, 155. Used by permission.

In the data presented here, it is apparent that generalized anxiety states predominate. Even lack of concentration and laziness are due to this; and the same is true of nervous habits, lack of bladder control, specific fears, and speech difficulties. Boys were found to have more symptoms of emotionality than were girls, and fairly pronounced age differences were noted.

COMMON EMOTIONAL PATTERNS OF CHILDHOOD

After the early months of babyhood have passed, a number of differentiated emotional patterns, each with its own specific form of behavior, may be observed. The most common of the emotional patterns characteristically found in childhood, the stimuli which arouse them, and the form of response made, are given in the following pages:

1. FEAR

Fear is one of the most frequently experienced of the childhood emotions. Its effects on the physical and mental well-being of the child are so harmful that parents and teachers make every effort to eliminate its

causes or, if that is impossible, to keep it from occurring in a pronounced form.

Origin of Fears. While it is true that most fears are learned, they are nevertheless not all learned in the same way. Lawton (1938) has divided learned fears into three types, each of which has been acquired in a different manner. The first type consists of fears that originated through association with native or instinctive fears. "Albert's" fear of the white rat, described by Watson (1925) and reported earlier in the chapter, is characteristic of conditioned fears. The second type consists of fears that are acquired through direct imitation of those who are afraid, such as fear of thunderstorms which has been learned by imitating the fear behavior of a parent, brother, sister, or playmate.

The third type consists of fears that are an aftermath of unpleasant experiences, as may be found in fears of doctors, dentists, or dogs which have resulted from unpleasant experiences with each. Unpleasant dreams may give rise to such fears. Jersild and Holmes (1935) have reported that children become afraid of a thing after it has appeared in the setting of a terror dream. This may give rise to a new fear, or it may intensify an already existing fear. These terror dreams may occur as early as the third year and influence the day fears of the young child.

What Children Fear. A number of experimental studies have been made to discover what young children fear. Watson (1925) showed babies a variety of animals, such as a black cat, rabbit, white rat, pigeon, and dogs; a bonfire made of newspapers; and animals in a zoo, especially reptiles, frogs, turtles, and snakes. As no fear occurred when any of these stimuli were presented, Watson concluded that only through conditioning would fear of animals or fire occur. The only native stimuli to fear, he contended, were loud, harsh noises or situations involving loss of support.

From direct observations by parents and other adults, from interviews with children, from case studies, and from observations of children in controlled-experimental situations, Jersild and Holmes (1935) found the objects most feared by children, three months to twelve years old, to be animals, such as dogs and snakes, dark rooms, high places, strange persons, and loud sounds. The least feared situations were insecure footing and being left alone. Parents' reports and experimental situations in which phonograph recordings of artificial thunder were reproduced with amplification led Hagman (1932) to the conclusion that the most common causes of fear in young children are dogs, doctors, storms, deep water, and darkness.

In experimental situations, duplicating eight commonplace everyday life situations that might arouse fear, Holmes (1935) reported the follow-

ing percentages of fear responses for children twenty-four to seventy-one months old:

TABLE XXXI. NUMBER AND PERCENTAGE OF ALL CHILDREN WHO SHOWED FEAR IN RESPONSE TO THE VARIOUS EXPERIMENTAL FEAR SITUATIONS

Situation	Number of children studied	Number showing fear	Percentage showing fear
1. Being left alone	104	12	11.5
2. Falling boards	104	12	11.5
3. Dark room	104	43	41.3
4. Strange person	104	21	20.2
5. High boards	103	28	27.2
6. Loud noise	103	18	17.5
7. Snake	86	38	44.2
8. Large dog	56	28	50.0

Source: HOLMES, F. B. An experimental study of the fears of young children. In A. T. Jersild and F. B. Holmes, *Children's fears. Child Develpm. Monogr.*, 1935, No. 20, p. 219. Used by permission.

As may be seen in the above table, the large dog, the snake, and a dark room proved to be the most effective stimuli in arousing fear, and being left alone or falling boards, the least effective.

Pratt (1945) studied the fears of rural children, ages four to fifteen years. He found an average of 7.5 fears for each child, with girls listing a greater mean number of fears than boys. Of the fears listed, 75 per cent were of animals, 22 per cent were not animals, and 2 per cent were illegible items. Of the animals feared, vertebrates were listed 95 per cent of the time and anthropoids, 4 per cent. Boys were more afraid of wild animals; girls, of insects and spiders.

Fears of nonanimals were less pronounced but increased with age. Fire, engines of destruction, and darkness were most often feared. Fears of illness, disease, dentists, and doctors increased with age. Schoolwork was found to trouble boys more than girls, while girls were more troubled about illness, disease, darkness, and night.

When England (1946) asked elementary-school children to "draw what you feel are the most important events of your life," he found that 27.4 per cent of all the drawings were fear drawings. Fear of falling was most frequently expressed, followed by fear of sickness, operations, spanking, being hit by a car, and being bitten by a dog or a snake. Concrete rather than imaginary fears, England noted, were presented by this group.

Characteristics of Fear Stimuli. Experimental studies have shown that children show fear in response to a wide variety of stimuli depend-

ing upon what they have learned to fear as a result of individual experiences. In spite of the large number of stimuli that have been observed to arouse fear in children, several characteristics stand out as all-important. This suggests that it is not the stimulus itself but rather *the way that it is presented* that determines whether or not a fear response will be aroused.

An important characteristic of all fear stimuli is that they occur suddenly and unexpectedly, which gives the child little opportunity to adjust himself to the changed condition. Jones and Jones (1928) showed preschool children flashlights, false faces, stuffed animals, mechanical toys, and slimy or furry animals. The interesting finding that they reported was that not the object itself but its *suddenness* and *unexpectedness* were the characteristics which caused fear. The frog, for example, which made sudden jumps, was found to be especially frightening.

Similarly, fear of strangers, which most babies show between the ninth and twelfth months, is due in part to the fact that the baby is prepared to see a familiar person and is unable to adjust himself at first to the sudden appearance of a stranger. The fear of white rats, which Watson (1925) reported as being due to conditioning, was doubtless due in part to the sudden noise or loss of support that occurred unexpectedly when the baby was adjusted to reach for the rat. As the child grows older, and becomes more mature intellectually, he can adjust himself more quickly to sudden and unexpected circumstances.

Closely related to the qualities of suddenness and unexpectedness is that of *novelty* or *strangeness*. Stimuli that embody the element of novelty are apt to arouse fear, while the same stimuli, after the element of novelty has disappeared, will not arouse fear. Many instances of fear in the presence of familiar people can be traced to the fact that they are dressed in an unfamiliar way, as when the child's nurse wears her street clothes in place of the accustomed uniform. As soon as the child recognizes the nurse and the element of novelty in her appearance disappears, the fear itself disappears.

Effect of Child's Condition. The child's condition, physical and psychological, at the time the fear stimulus is presented, will determine to a large extent how he will respond. If he is tired, hungry, or emotionally disturbed, he will respond with greater fear than if his condition were more favorable. Likewise, if he is alone, his reaction will be different from what it would be if he were with his mother, his nurse, or others in whom he has confidence. Should he remember similar experiences which, in the past, were unpleasant or even terrifying, he will react with fear to the new situation which, in and of itself, would normally not arouse fear but which reminds him of the old, terrifying experience.

What effect intelligence has on the child's tendency to show fear has been investigated by Boston (1939). In a comparison of the fears of children of average intelligence with those of children of superior intelligence, Boston noted a relationship between superior intelligence and the awareness of possible danger, and hence the presence of fear.

Summary. The experimental studies referred to above suggest that it is difficult to predict when a child will show fear and what will cause it. *Fear is not dependent on a given stimulus alone,* such as a loud noise, *but on the surrounding circumstances,* the manner in which the stimulus is presented, *the child's past experiences, the child's present physiological and psychological condition,* and many related circumstances. One child will respond with fear and another will show no fear in identical situations.

Fear Response Patterns. Fear displays itself in an *attempt to withdraw* from the object that aroused it. Accompanying this is whimpering, crying, a sudden and temporary holding of the breath, and a checking of the activity the child is engaged in. Under three years of age, the response occurring in fear is typically one of helplessness and the cry is the baby's call for help. He hides his face and gets as far away from the feared object as he can, by creeping or walking. He hides behind a person or a piece of furniture and remains there until the fear subsides, or until he feels that it is safe to emerge.

As the child grows older, the overt responses in fear are checked as a result of social pressure. The crying reactions cease, though the characteristic facial expressions remain and the child withdraws from the feared object. Shyness, as a type of fear reaction, was found by Shirley (1931*a*) to be common between the ages of eighteen months and two years. This took the form of playing with the toes or shoes, bending the head, hiding it behind the arms, and then coyly raising it to look at others. Girls, as a rule, show more pronounced fear reactions than boys at all ages.

Fears Change with Age. Fear has been found to be a function of age. Situations which cause fear in young children, two to four years of age, are more matter of fact and less fanciful than those which cause fear in older children. As the child grows older, his understanding, owing to comprehension of words and pictures, his ability to read, his imagination, and his ability to see relationships between the new and the old, lead to the development of new fears, as well as a change in already existing fears.

In Jersild and Holmes's (1935) study, reported earlier in the chapter, it was found that, during the first two years of life, the children feared noises and objects, agents, or events associated with noise; strange, unfamiliar, or novel situations, objects, and persons; pain and tactual-sensory shock; falling, high places, and sudden displacements. Fear of animals was progressively more frequent up to four years and declined

afterwards. Fear of dark and being alone increased with age. In Fig. 50 are shown the percentages of children at different age levels who showed fear in various experimental fear situations.

With age, they found a *change in the type of object or situation* that aroused fear. There was a large decline in the frequency of fears in response to strange objects, persons, and situations; in response to noises and objects or agents associated with noise; and in response to sudden or unexpected visual phenomena. The largest decline was in the case of fear of strange events. Thus, it is apparent that there is a decrease of fears to concrete and tangible stimuli.

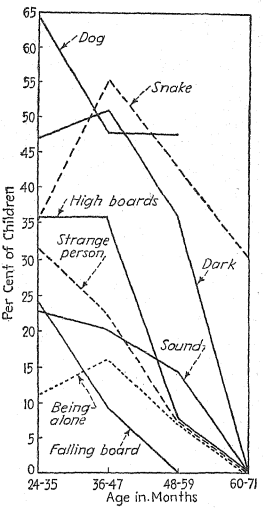

FIG. 50. Percentage of children at yearly age levels who showed fear in response to the various experimental fear situations. (*From A. T. Jersild and F. B. Holmes, Children's fears. Child Develpm. Monogr.*, 1935, **20**. *Used by permission.*)

On the other hand, there was a marked increase in the frequency of fears of imaginary, fanciful, subjective, supernatural, or remote dangers; of the dark and imaginary creatures associated with the dark; of matters associated with death and corpses; of being alone; of bogies and other imaginary creatures; and of characters recalled from stories and pictures. There was also an increase in fears regarding possible accidents and injuries, through fire, drowning, and traffic; concerning loss or death of relatives, medical treatment, high places, ridicule, personal future, dying, and ill-health.

There is a definite and consistent *decrease in the number and severity of fears* as the child grows older. Jersild and Holmes (1935*b*) made a follow-up of fears in the case of 47 children thirty-four to eighty-three months old, 30 of whom they had studied at an earlier age. The average number of fears for the different age levels in their group was as follows:

Average for 3-year level	5.5 fears
Average for 4-year level	6.3 fears
Average for 5-year level	4.3 fears
Average for 6-year level	3.2 fears

Elimination of Fear. The elimination of fears, especially those resulting from conditioning, is very difficult. M. C. Jones (1924*a*), in an experimental study of methods of eliminating fears in children, three months to seven years of age, found real success in only two, the method of "direct conditioning" and the method of "social imitation." In the former method, the fear object gave way to a craving object, by having the thing the child feared associated with the eating situation or some similar situation that is pleasant to the child.

The social imitation method is one in which fear is eliminated when the child who experienced the fear observes and imitates the behavior of a child who is not afraid in that situation. The other methods used by Jones, "verbal appeal," "elimination through disuse," "negative adaptation," "repression," and "distraction," sometimes proved to be effective but could not be relied upon unless used in combination with the other methods.

Jersild and Holmes (1935*a*) asked mothers of young children what they found to be the most effective methods of overcoming fears. The reports they received indicated that, in general, a technique which helps the child to become more competent or skillful and encourages him to undertake active dealings with the thing he feared is best. The methods used to attain this end were:

1. Encouraging the child to acquire skills that will be of a specific aid to him in dealing with the feared situation.
2. Leading the child gradually into active contact with the thing he fears, by presenting the stimulus at first in a less intense form and then gradually introducing all the conditions that initially evoked fear.
3. Giving the child an opportunity to become acquainted with the feared stimulus of his own accord.

As additional aids, Jersild and Holmes suggested using verbal explanation and reassurance, combined whenever possible with a practical demonstration of the nature and harmlessness in the child's presence, and reconditioning, by presenting the stimulus in association with an attractive stimulus.

Ineffective techniques, on the other hand, consisted of ignoring the child's fears; coercing the child to come in contact with the feared situations by physical force, scoldings, ridicule, or invidious comparisons; completely removing the cause of fear for the time; and offering palliatives for the child's symptoms of fear.

Holmes (1936) tried out experimentally a method of overcoming fears of a high place and of a dark room in young children by directing and aiding the child in learning various ways of coping with the fear situation. The child was an active participant in the procedure. Further-

more, the child was gradually familiarized with the fear situation, he received verbal reassurance, and had a pleasant conclusion to each performance in the form of a game.

Fear of walking across a board at 6 feet from the ground, Holmes attempted to overcome by aiding and encouraging the child to acquire the abilities which would enable him to participate in the situation. Fear of the dark was overcome by helping the child to orient himself and find his way through the dark in order to turn on the light at the back of the room. Holmes was unable to say whether these fears were eliminated only in the experimental fear situation or whether they would also be eliminated from other situations in which they might be encountered.

Fear of the unfamiliar disappears as the child becomes acquainted with his environment, according to Slater, Beckwith, and Behnke (1939). They noted a day-by-day decline in the fear and uneasiness exhibited by children who were attending nursery school for the first time. Hagman (1932) found most mothers reported using explanation, explanation combined with efforts to confront the child with the feared situation, and explanation combined with gradual exposure to the feared situation. The last of these methods proved to be the most fruitful of the three used.

Conn (1941), working with children at the Children's Psychiatric Clinic of Johns Hopkins Hospital, found that through a series of play interviews, fearful children had an opportunity for self-expression, for self-scrutiny, and for personal reorientation. The child then develops courage from self-criticism and a better understanding of himself.

2. Worry

Worry is an imaginary form of fear. It is a fear not aroused directly by a stimulus from the child's environment. It may come from imagining situations which could arise and which might, in turn, affect the child. It may also come from books, movies, comics, the radio, or other popular recreations. Because worries are caused by imaginary rather than real stimuli, they are not found among very young children. The child must reach a stage of intellectual development in which it is possible for him to imagine things not immediately present before he is capable of worrying.

Through the use of the "worries" inventory of 53 items given to children in grades 5 and 6 in New York City, Pintner and Lev (1940) had boys and girls indicate whether these problems concerned them "often," "sometimes," or "never." When the different items of the inventory were classified into 8 major categories, it was found that family and school problems worried the children most. In Table XXXII are pre-

sented the average percentage of boys and girls who worried about different problems.

TABLE XXXII. AVERAGE PERCENTAGE OF BOYS AND GIRLS ANSWERING "SOMETIMES" OR "OFTEN," BY CATEGORIES

Category	Boys	Girls
Family	73	76
School	..	70
Personal adequacy	65	55
Social adequacy	64	56
Economic	64	54
Health	64	66
Imaginary	46	48
Ornamental (clothes, etc.)	44	36

Source: PINTNER, R., and LEV, J. Worries of school children. *J. genet. Psychol.*, 1940, **56**, 73. Used by permission.

Using a "Worries" inventory of only 23 items, Jersild, Goldman, and Loftus (1941) investigated the worries of New York City children of the same grades and ages as Pintner and Lev's group. Failing a test, being late for school, being scolded by a teacher, and being left back in school were the most common worries relating to school. Out-of-school worries that were most common were dreams, being scolded by mother or father, falling or being in a high place, and dying or being killed. On the whole, they found that worries related to school life were more common than out-of-school worries.

In Table XXXIII are listed the 10 most common and 10 least common worries of sixth-grade boys and girls with an average chronological age of twelve years, as reported by Zeligs (1939).

As may be seen from the data presented above, the most common worries of children of this age concern the health and safety of members of their families and their own school reports. Girls worry more than boys, especially about school and safety. Scores of the Woodworth-Cady Questionnaire indicated that a definite relationship existed between psychoneurotic traits and a large number of worries in children.

Using a series of pictures that show children in different situations, Dorkey and Amen (1947) studied anxiety among young children. The anxiety scores for the older children in the group were higher than for the younger. Anxiety was found to be associated with specific areas of experience. The greatest anxiety was found in the child-child relationships, such as play with older or younger children, and aggressive attacks. Least anxiety accompanied routines, as dressing, toileting, and going to bed alone, and with child-adult relationships. According to Cummings

TABLE XXXIII. CHILDREN'S WORRIES

Worry	Boys, per cent	Girls, per cent	Total, per cent
Most common:			
About the health of members of my family	82.6	72.4	76.0
About school marks and reports	60.5	75.1	68.8
When people are hurt	71.1	66.5	68.8
About my schoolwork	53.5	59.2	56.8
About tests in school	53.5	59.2	56.8
That there might be a war	56.1	55.3	55.6
That people might die	50.1	59.2	55.3
About passing to the next grade	49.1	56.0	53.0
About my own health	44.7	55.3	50.8
That I may not satisfy my mother	44.7	51.3	48.5
Least common:			
Because I don't like my nickname	11.4	7.9	9.4
That I might fall out of a building	7.9	9.9	9.1
When sister comes home late	14.1	4.6	8.7
That my dog might bite people	4.4	11.2	8.3
Because I am small	6.1	4.6	5.3
Because I do not have fun	5.3	4.6	4.9
Because I am not good in baseball	7.0	3.3	4.9
Because I have the habit of stuttering	5.3	3.9	4.5
About the safety of my pet cat	3.5	3.3	3.4
Because I want an electric train	1.8	0.0	0.8

Source: ZELIGS, R. Children's worries. *Sociol. and soc. Res.* 1939, **24**, abbreviated from pp. 29–31. Used by permission.

(1944), generalized anxiety is more common than any one specific fear. Girls, on the whole, tended to be more fearful than boys.

3. ANGER

Anger is a more frequent emotional response in childhood than fear (1) because there are more anger-provoking than fear-provoking stimuli in the child's environment and (2) because many children discover at an early age that anger is a good way to get attention or to satisfy their desires. Each year, as the child grows older, there is an increase in the number of situations that arouse his anger. The result is that the child *displays more angry reactions,* of one form or another, with increased age, *while the fear reactions decrease,* owing to his increased ability to realize that in most instances there is no real need for fear.

Stimuli to Anger. In general, the *situations that give rise to angry responses* consist of those involving body restraint; interference with movements the child wishes to make either by others or by his own inabilities; blocking of activities already in progress; thwarting of wishes,

plans, and purposes the child wants to carry out; or a number of cumulative irritations. In young children, anger is most often aroused in response to interference with physical activities or as a result of the child's own ineptitude. In older children, it comes from interference with possessions and plans or from ineptitude.

Experimental studies of anger have placed emphasis on the common causes of anger in young children. Jones, working with Watson (1925), observed children, sixteen months to three years of age, continuously from morning to night, to find out what caused angry outbursts. More than 100 situations were found to arouse anger, the twelve most common of which, in the order of frequency, were:

1. Having to sit on the toilet chair.
2. Having property taken away.
3. Having the face washed.
4. Being left alone in a room.
5. Having the adult leave the room.
6. Working at something which won't pan out.
7. Failure to get adults or other children to play with them, or look at them and talk to them.
8. Being dressed.
9. Failure to get adults to pick them up.
10. Being undressed.
11. Being bathed.
12. Having the nose wiped. (Quoted by permission.)

Ricketts (1934) studied the angry outbursts of children in a preschool group and supplemented the information with observations made by mothers in the home. The situations in which anger was displayed, in the order of frequency, consisted of conflicts over playthings, conflicts over toilet and dressing, interruption of interesting activities, and thwarting of apparent wishes. The situations in which anger was least often displayed consisted of those in which the child was urged to eat or in which the part of another child was taken.

The most frequent anger stimuli for three- to five-year-olds, Felder (1932) reported, are vigorous attacks from another child, another child's holding a desired object, another child's calling names, and thwarting by the environment. Anger outbursts occurred more often indoors than outdoors.

In an analysis of temper tantrums in early childhood, Isaacs (1940) found that one common element was present in the situations that gave rise to the tantrums. The tantrum, she maintained, is a response to *compulsion*, as when a child is told to do something he does not want to do, when he is denied something he wishes to have, or when there is some change in the routine of his daily life. A tantrum may occur also when a

child fails to achieve something he is trying to do, as when he cannot successfully manipulate some physical object.

What specifically arouses anger *in older children* has not been subjected to controlled-observational studies similar to those of the nursery-school years. It is a well-known fact, however, that any thwarting of desires, interruption of activities in progress, constant faultfinding, teasing, "lecturing," or making unfavorable comparisons with other children will lead to anger in older children.

How children react to inconveniences and annoyances from their environments has been investigated by Zeligs (1941, 1945) in the case of sixth-grade boys and girls. Boys were found to be easily irritated by such inconveniences and annoyances as a flat tire on their bicycles, bad smells, doing things they didn't like, disappointments, and not getting what was promised them. The most frequent annoyances listed by girls were to break their bicycles, to lose something, not to be permitted to play outside, to have their hair pulled, and to be punched.

Social annoyances among sixth-grade children, Zeligs (1945) found, consisted of being blamed for something they had not done; or by other persons' cheating, doing unfair things, or bullying. At home they were annoyed when whipped or scolded, especially for something they had not done. School annoyances included getting low marks, being with teachers who have pets, having the mother come to school, or having certain teachers. Personal conduct annoyances most frequently reported included cursing, telling lies, biting fingernails, having bad habits, and being accused of lying.

Anger Responses. The *form of expression* of anger *varies* from one child to another, owing partly to environmental restraint and partly to learning. In babies and very young children, individual differences are much less pronounced than they are later in childhood and adolescence.

A very comprehensive study of anger in young children was made by Goodenough (1931) from records kept by mothers over a period of one month in which they kept accurate account of the anger displayed, the duration of the anger, and what had occasioned it. Forty-five children, ranging in age from seven months to seven years ten months, with I.Q. scores from 90 to 148, were included in the study. From this study, the following important facts about anger were brought out:

1. With advance in age, the percentage of outbursts in which energy was not directed toward any serviceable end, such as screaming, kicking, and holding the breath, gradually decreased.
2. The specific aspects of behavior during anger were

   a. *Stamping,* ranging from 4.4 per cent in babies between the ages of one and two years, to 13.9 per cent among children of four and over.

b. *Kicking*, which occurs more frequently between the ages of one and two (27.7 per cent for two-year-olds) than at later ages (12.1 per cent for children of four and over).

c. *Jumping up and down*. This appears in about 4 per cent of the cases over one year of age and more often in boys than in girls.

d. *Striking*, which increases with age, from 2.8 per cent for the two-year-olds as compared with 11.5 per cent for those of four years and older. It is found almost twice as frequently in boys as in girls.

e. *Throwing self on floor*, which increases from 5.6 per cent for babies from one to two years to 10.0 per cent for children between three and four and then decreases to 3 per cent for children of four and over.

f. *Holding the breath*. This proved to be very infrequent and was reported in only 4 out of 1,878 outbursts.

g. Other forms of behavior, reported infrequently were stiffening the body, making the body limp, pulling away, struggling, pointing, and frowning.

3. In the case of vocal behavior, crying was most frequent up to the age of four years and then decreased. At every age, it appeared more frequently among boys than among girls. Screaming increased to the ages of two to three years and then decreased.

4. During the second year of life, the frequency of display of overt manifestations of anger reaches a maximum and then falls off rapidly. After that time, boys show more frequent and more violent anger than girls.

5. With advancing age, the child's anger response becomes more directed toward a given end, and there are more attempts to retaliate by hurting the feelings of the offender than by injuring the body. At the age of two years, only 10.6 per cent of anger was of this sort as contrasted with 28 per cent at the age of four years or older.

6. The more violent phases of anger become shorter with increase in age and, in place of violent outbursts, Goodenough found sulking, brooding, and whining.

7. Sex differences in the display of anger proved to be negligible up to the age of three years. At four years and over, the percentage of display of undirected energy during anger was 45 per cent for boys and 29 per cent for girls.

8. The typical "temper-tantrum" behavior reaches its peak of severity between the third and fourth years.

9. The most important factors in handling temper tantrums in young children are even, consistent discipline; a sense of humor on the part of the parents; and freedom from unnecessary tension.

The most common overt behavior exhibited by three- to five-year-olds during anger outbursts, Felder (1932) reported, was resistant behavior and, to a lesser extent, retaliative. These were accompanied by screaming, refusing, crying, calling names, attacking, kicking, and appealing for help.

The violence of the child's response in his tantrums, Isaacs (1940) commented, is usually out of all proportion to the actual compulsion. This, she interpreted, is explained by the fact that the most primitive fantasies and anxieties are at work. The child, for example, is fighting a fantasy mother rather than the real one with whom he actually struggles.

Temper tantrums, Isaacs believes, are a phenomenon of normal

development, since they appear to some degree among all classes of children in all sorts of circumstances. Some children, she noted, are more liable to such outbursts in some circumstances than are others. After reaching their peak in early childhood, temper tantrums gradually lessen in frequency until the sixth or seventh, when they become comparatively rare in normal children.

In a check-up study on children who had spent a year in nursery schools, Ricketts (1934) noted a decrease in anger manifestations, such as tantrums, stamping of feet, biting, snatching, kicking, crying, screaming, and calling for mother. This, Ricketts explained, was doubtless due to the fact that children learn that many of these methods are unsuccessful and socially disapproved in the school. Sulkiness, negativism, refusal to speak, fussiness, scolding, and quarrelsomeness are the common forms through which anger expresses itself in older children. The tendency to quarrel increases from seven to ten years, reaching its peak by the time the child is twelve or fourteen years old, and after that, decreases.

Duration of Anger. The duration of anger outbursts changes little during the first eight years of life. In most instances, angry outbursts last less than 5 minutes (Goodenough [1931]). Ricketts (1934) reports that nursery-school children showed anger of the following durations: 41 per cent of the group studied, less than 1 minute; 48 per cent, between 1 and 5 minutes; and 11 per cent, over 5 minutes. At home, 15 per cent of the children showed angry outburst for less than 1 minute; 61 per cent, between 1 and 5 minutes; and 24 per cent, for over 5 minutes.

The termination of anger outbursts in preschool children, Felder (1932) reported, comes from force of competition, ignoring, intervention of the observer, and realization of the failure of the method employed. After the outburst has ended, Felder found, a cheerful attitude is by far the most frequent type. Relatively few children are fretful, resentful, stubborn, or sulky.

Individual Variations. *Children differ greatly* in their susceptibility to anger. This is due partly to the heredity of the child and partly to his environment, especially the way in which he is dealt with by adults and other children. Goodenough (1931) found that the health of the young child was closely related to his display of anger. Any temporary condition of poor health tended to increase the frequency of temper outbursts. In the case of young children who have suffered from previous illness, anger was more frequently displayed than in the case of those whose previous health had been good. Likewise, Goodenough found, there was a positive relationship between the number of adults in the household and the frequency of anger shown.

A temper tantrum in a child who has the necessary ability to verbalize

his needs and wishes is, according to Geleerd (1945), a symptom of regression to babyhood. It does not always indicate, she stressed, that the child's emotional development is fixed at that level. It may occur in a situation for which the child's limited experience and vocabulary are not adequate, or it may come in a somewhat maladjusted child. Because of these individual differences in causes, it is necessary to discover the level of the child's emotional development, as evidenced by the degree of his dependency and his hold on reality, to determine the correct method of handling a tantrum in an individual case.

As anger soon *settles into a habit*, if called forth frequently, it is obviously wise to avoid anger-arousing situations whenever possible. The child must learn when to become angry and when not. Thus, control consists of directing the use of anger into socially acceptable channels rather than restraining it. The child must learn, likewise, how to express his anger so as to avoid social disapproval. Good models of anger expression and self-control on the part of parents or other adults prove to be the best guarantee of self-control on the part of the child.

4. Jealousy

Jealousy is an outgrowth of anger. It is an attitude of resentment directed toward people, while anger may be directed toward people, toward oneself, or toward things. Jealousy may take the form of an outburst closely resembling a temper tantrum, but more often it is limited in its expression to an attitude. What causes it, and what form it takes, is greatly influenced by training and by the treatment the individual receives from others.

Stimuli to Jealousy. The *situation* that calls forth jealousy is always *a social one*, involving people, especially those for whom the child has a feeling of affection. In the young child, it is the parents or other adults who have taken care of him who call forth jealousy. Because of the child's craving for attention and affection, he often finds himself in competition with another child. Clinical studies of jealousy in young children have shown that jealousy is a very common emotional experience, originating, generally, with the birth of a younger sibling, when the child is from two to five years old. This does not necessarily occur. Watson (1925) reported that when a younger child was born into his family, the older child, age two to three years, showed no sign of jealousy.

How preparation for the arrival of a new baby in the household influences the attitude of the child has been investigated by Sewall (1930), in the case of children ranging in age from twelve months to five years ten months at the time of birth of the sibling. Of the 70 children studied,

33 had been told of the expected arrival and 37 had not. In the accompanying table may be seen the effect of this preparation:

TABLE XXXIV. RELATION BETWEEN THE CHILDREN'S ATTITUDE TOWARD THE YOUNGER SIBLING AND THEIR PREPARATION FOR HIS BIRTH

Attitudes	Prepared	Not prepared	Total
Jealous	19	20	39
Not jealous	14	17	31
Total	33	37	70

Source: SEWALL, M. Two studies in sibling rivalry. *Smith Coll. Stud. Social Work*, 1930, **31**, 11. Used by permission.

These data indicate little difference in the behavior of the children and show that preparation is not a determining factor in the attitude toward the sibling.

In addition to jealousy which occurs when a new baby arrives in the household, many young children show jealousy toward one parent, especially the father. Because of the child's constant association with the mother, he develops a proprietary attitude toward her and, as a result, resents her display of affection for the father. One of Watson's (1925) children, at the age of thirty-seven months, showed jealousy when the parents embraced each other, while the younger child, eleven months old, gave no indication of being jealous. Jealousy sometimes occurs in the younger sibling who resents the privileges given to the older children of the family. This attitude is often intensified by a show of favoritism on the part of one or both parents.

As children begin to develop interests outside of the home, around the fifth and sixth years, jealousy toward a member of the family becomes less pronounced. It may, however, show itself in the child's reactions toward schoolmates or classmates, especially toward those who excel in schoolwork or athletics or those who rank as the unquestioned leaders of the group.

Jealous Responses. The form jealousy takes in a young child is very similar to that of anger; but, unlike anger, it is always directed against another person. Its characteristic expressions include hurting the offender, reverting to infantile behavior, such as bed-wetting or thumb-sucking, making a bid for attention by pretending to be ill or afraid, refusing to eat, and general naughtiness. A characteristic jealous response is shown in Fig. 51.

Sewall (1930) reported the following methods of showing jealousy on the part of preschool children:

1. Bodily attacks on the younger sibling..... 26 cases
2. Ignoring the presence of the sibling..... 2 cases
3. Denying having a younger sibling..... 2 cases
4. No outward manifestation toward the sibling, but definite personality changes at the time of its birth..... 9 cases

According to Vollmer (1946), jealousy is charged with tension and

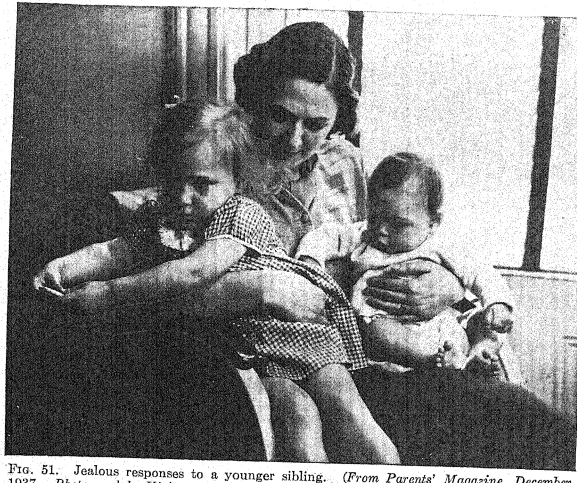

FIG. 51. Jealous responses to a younger sibling. (*From Parents' Magazine, December, 1937. Photograph by Vivien Rodvogin.*)

usually discharges into a variety of reactions, the most common of which are the following:

1. Aggression or hostility against the rival, or, in extreme cases, against everyone.
2. Identification with the rival, as seen in regression to infantile ways.
3. Withdrawal from the beloved person.
4. Repression, especially by an "I don't care" attitude.
5. Masochism, especially around the age of puberty, as seen in the self-pity of a martyr.
6. Sublimation and creative competition.

In older children jealousy is shown *directly* by verbal quarreling, telling tales, gossiping, disparaging comments, making fun of others, teasing, and instigating quarrels. *Indirect* expressions consist of daydreaming,

especially of the martyr type, boasting, ignoring others, and sarcasm. Each child has his own individual method of showing jealousy which, he has discovered through trial and error, gives him satisfaction.

Individual Variations. The amount and intensity of jealousy in children vary markedly. Definite *sex differences* in jealousy exist. Foster (1927) found that two out of three jealous children are girls. The *peak of jealousy* comes between three and four years of age, with another peak during adolescence. Jealousy is associated with *age differences* of eighteen to forty-two months (Sewall, 1930). Sixty-seven per cent of the children of that age difference showed jealousy as compared with 33 per cent whose age differences were greater or less than eighteen to forty-two months. There is more jealousy in children of the higher *intellectual* levels than in the lower.

The *oldest child* in the family is more often the jealous one than later born children (Foster, 1927). This may be explained by the fact that the oldest child, having been the center of attention before the new baby arrived, hates to share the parents' love with the younger children. A larger number of jealousy cases occurs in girl-girl combinations (60 per cent) than in boy-boy (44 per cent) or boy-girl (30 per cent) combinations (Smalley, 1930). In small families of two or three children, jealousy is a more common experience than in larger families or in families where there is an only child (Ross, 1930).

Jealousy is often a product of the home situation, Sewall (1930) noted, especially of the attitude of the mother and the method of discipline used. The less attention the mother pays to her children, the less likely they are to be jealous. Oversolicitous mothers, on the other hand, have a high percentage of jealous children. Likewise, those who are inconsistent in discipline produce jealousy in their children more often than those whose discipline is more consistent. Jealousy is often intensified by parental attitudes, especially those of nagging or unfavorable comparisons with other children in the household (Ross, 1930).

Levy (1936) has noted that the jealousy of the child is in direct proportion to the strength of the maternal bond. This means, he explained, that the closer a child is to his mother, the more he has to lose when she turns away from him.

Evaluation of Jealousy. In spite of the unpleasant aspects of jealousy and the problems that it gives rise to in the home and in the school, there are certain values of jealousy that should not be completely overlooked. On the constructive side, jealousy causes competition between brothers and sisters or between classmates in school, thus acting as a source of motivation. To outdo each other, each puts forth more energy, to gain adult recognition. When one child is scolded or punished, the

other tries harder, in the hope of winning the adult favor he craves but is uncertain about.

5. Joy, Pleasure, Delight

Joy, which in its milder forms is known as pleasure, delight, or happiness, is a positive emotion, because the individual experiencing it makes no attempt to remove the situation giving rise to it. He accepts the situation or attempts to continue it because of its pleasant effects.

Stimuli to Joy. The situations which give rise to joy differ from one age to another. The health and general bodily condition of the child also influence his emotional responses. As the child grows older, more situations and also more complex situations call forth the joyful emotions. They are always accompanied by smiling or laughing and can readily be detected because of these overt responses. Unlike the emotions already discussed, joy is generalized and undifferentiated rather than specific in form.

The pleasant emotions are at first closely bound up with physiological well-being. Bühler's (1930) observations of *one-month-old* babies showed that a well-defined expression of comfort, apparent in glowing eyes, lifted corners of the mouth, and relaxing of the facial strain which accompanies close attention, could be observed when the baby was physically comfortable and happy after feeding or a good sleep, or in a dry, warm, and comfortable position. By the *second month*, laughing occurred in connection with such situations, but only when the babies saw or heard another person. Laughing proved to be more common than the negative reaction of crying. Similarly, Jones (1926) has reported that smiling in a social situation, when an adult leans over a baby and makes clucking sounds, appears first when the baby is thirty-nine days old.

The smiling and laughing of babies during the first year of life have been carefully studied by Washburn (1929) in the case of babies ranging in age from eight to fifty-two weeks. The general facial and bodily expressions, as well as the stimuli that arouse these forms of behavior, have been analyzed by means of observations supplemented by moving-picture records. Laughing and smiling were elicited by standard situations, such as peekaboo games or clapping hands. In Table XXXV are given the stimuli which can arouse the smiling and laughing of babies at different ages during the first year of life and the ages at which these responses first appear.

Leuba (1941), in a carefully controlled study of laughter in two of his own children, reported that laughter, smiling, chuckling, squirming, and other general bodily movements appeared innately (through maturation) between six and seven months of age, in response to mild, intermittent

tickling. These responses were especially marked when the tickling was in the armpits and along the ribs, though they could sometimes be elicited by tickling the soles of the feet, underneath the chin, or on the side of the neck. Before the end of the first year, the laughter pattern became conditioned to the sight of moving fingers held above the infant, especially when suddenly thrust toward the infant's body. Sustained,

TABLE XXXV. SMILING AND LAUGHING OF BABIES

	Age, Weeks
Smiling:	
Social stimulation	8
Peekaboo. Cloth over subject's face	8
Rhythmical knee-drop	12
Threatening head	16
Elevator play	16
Tickling	16
Peekaboo. Cloth between examiner and subject	20
Sudden reappearance from under table	20
Rhythmical handclapping	20
Apparatus	20
Reappearance from cupboard	24
Laughing:	
Social stimulation	12
Peekaboo. Cloth over subject's face	16
Threatening head	16
Rhythmical handclapping	20
Rhythmical knee-drop	20
Elevator play	24
Sudden reappearance from under table	24
Peekaboo. Cloth between examiner and subject	24
Tickling	24
Sudden reappearance from under cupboard	44
Apparatus	56

Source: WASHBURN, R. W. A study of the smiling and laughing of infants in the first year of life. *Genet. Psychol. Monogr.*, 1929, **6**, 491. Used by permission.

vigorous tickling, on the other hand, invariably produced violent bodily movements and crying.

Watson (1925) studied 85 situations causing laughter in children, sixteen months to three years of age. These children were observed constantly from waking to sleeping time. The seven most common experiences that elicited laughter were

1. Being played with (playfully dressed, tickled, etc.).
2. Running, chasing, romping with other children.
3. Playing with toys (a ball was particularly effective).
4. Teasing other children.
5. Watching other children at play.

6. Making attempts which resulted in adjustment (*e.g.*, getting parts of toys or apparatus to fit together or work).

7. Making sounds, more or less musical, at the piano, with a mouth organ, singing, pounding, etc. (Quoted by permission.)

Many situations, Watson reports, may call out crying instead of laughing, depending on how they are handled.

Tickling is also a source of laughter. The areas most responsive to tickling are those which are generally guarded against touch. The stimulus must come as a surprise, as is shown by the fact that the baby cannot tickle himself. If a child is tickled by a stranger, the response will probably be anger and tears. If, on the other hand, the tickling is by a person friendly to the child and in a playful attitude, the response is one of laughter.

In general, then, it is apparent that the laughter of young children is of two kinds: the laughter of general *well-being* and the laughter of *amusement* at comical situations, in which the incongruous plays an important rôle. Any unusual sounds, funny sights, unfamiliar combinations, sudden appearances or disappearances of a person or a toy, the "bopeep" game, and the jack-in-the-box, are sources of much childish laughter. Other situations which give rise to laughter are unexpected noises, grotesque faces and figures, slight calamities, as bumping into people, verbal play, such as punning, jokes, practical jokes, and imitating others, especially their speech and gait.

Laughter in Older Children. As children grow older, similar stimuli arouse the pleasant emotions as in the younger ages. Physical well-being, incongruous situations, play on words, slight calamities, and sudden or unexpected noises never fail to call forth a smile or a laugh. In addition to these, the older child responds with laughter to situations in which he feels superior, especially those which offer an opportunity for him to achieve success. Release from the strain of pent-up emotions, such as anger or fear, and general physical well-being serve to call forth the pleasant emotions. These emotions are, for the most part, more pronounced when the individual is with the group than when he is alone.

Wilson (1931), in a study of 2,115 subjects ranging from one-month-old infants to children in the primary grades, found laughing and smiling to increase with age in situations involving pretense, recognition of oddities, teasing, recognition of one's own predicament, violation of convention, play on words, comparisons with direct allusions, and absurdities. Laughter, on the other hand, which accompanied the child's "own powers" was found to decrease after the nursery-school age.

The social significance of laughter has been stressed by Gregg (1928), who, by the use of a laughter index, noted that nursery-school children

laughed and smiled more readily in social situations than when alone. Similarly, Brackett (1933, 1934) found preschool children laughed most frequently in situations when they were associated with other people. The children who laughed most frequently, she noted, played more with other children who exhibited this same behavior than with the more sober members of the group.

For the most part, laughter was limited to situations involving only one individual in the case of the younger children, while the older children laughed when two or more were with them. Laughing, Brackett found, was a highly consistent pattern of behavior. The children who laughed a great deal during play situations expressed themselves in the same way during routine situations.

Laughter occurs almost always, Blatz *et al.* (1936) noted, when the child has completed an act, when the act is completed by another, or when there is an anticipation of its completion.

Responses in Joy. The joyful emotions are always accompanied by smiling or laughing and a generally relaxed state of the entire body. This contrasts markedly with the tenseness that occurs in the unpleasant emotions of fear, anger, and jealousy.

A detailed study of the characteristic expressions of smiling and laughing in little children made by Washburn (1929) showed that smiling changed greatly as the baby grew older. At the age of twelve weeks, smiling was expressed by a round, open mouth, twitching of the lips and other facial muscles, together with a protrusion of the chin and the sounds "ah-ah." At the age of thirty-two weeks, the mouth opened, thus raising the cheeks; the tongue protruded; the gums were exposed; the eyes were half closed, causing wrinkles at the outer corners; the arms, hands, and legs were waved around; and jargonlike sounds, together with babbles, formed the vocalization. At one year, a great individualization in the smile of different babies appeared.

Laughing proved to be much more stereotyped in its form than was smiling and did not vary to any appreciable extent during the first year of life. The mouth in laughter was found generally to be widely opened and round in shape; the tongue rarely protruded from the mouth but was generally flat on the bottom of the mouth cavity. Even though the mouth was wide open, the gums were little exposed and lower and upper teeth displayed by only one of the babies studied. The eyes displayed increased brightness and were generally almost closed, especially in the last quarter of the first year of life. The cheeks were drawn down by the lower jaw and thus gave a leveled appearance to the face. Only twice was flushing of the cheeks recorded. Little activity in the nose was recorded, with only an occasional wrinkling at the bridge apparent.

The chin protruded slightly, and the head was tilted backward, especially from the ages of sixteen to thirty-two weeks.

After laughter, the hands and arms were usually active. During laughter, however, the arms were most often relaxed at the side of the body or held straight outward. The same was true of the legs. The trunk, instead of bending forward as in the case of adults, remained relatively stationary. Respiratory changes were more marked than in smiling and were observed by pulsations of the abdomen.

6. Affection

Affection is an emotional reaction directed toward a person or thing. It is conditioned or built up as a result of pleasant experiences on the part of the child. The little child learns to have affection for those who play with him, who take care of his bodily needs, and who, in general, are responsible for giving him pleasure and satisfaction. Affection is not an innate emotional reponse directed toward parents, grandparents, or others with whom the child has a blood tie. His affection for his relatives depends, as it does in the case of those who have no relationship whatsoever to him, upon the way they treat him and whether or not his associations with them have been of a pleasurable sort.

The gradual growth of the sex organs of the child from birth until puberty, when the sex organs reach their mature size and function, results in an increase in sex feeling which is directed toward the individual for whom the child had developed an emotional attachment. Thus, the simple childish affections evolve into the love sentiments that play so important a role in the life of the adolescent. The development of the love sentiments will be discussed in the chapter on Sex Development.

Stimuli to Affection. Not only human beings but animals and inanimate objects, especially toys, serve as stimuli to call forth expressions of affection on the part of the little child. After the first year of life, the child discriminates little between animate and inanimate stimuli in the demonstration of affection. In fact, the young child's affection for a favorite toy or a family pet is often as pronounced as it is for a member of the family.

Within the family group, the child's affection for the different members occurs in varying degrees, depending largely upon the child's association with them. In the case of brothers and sisters, the affection is largely dependent upon the way they have treated the child. Affection for the parents also depends upon associations.

Simpson (1935), in a study of parent preferences of young children five to nine years old, found more mother than father preferences. As the children grew older, there was an increase in mother preference and

a decrease in father preference. This he explained by the fact that mother is a more constant companion to the children than the father and that the father becomes, as a rule, a stricter disciplinarian as the child grows older. Simpson also found that after children are six years old, the fathers play less with them, punish them more, and give them fewer gifts. Thus, a change in the child's attitude toward the father may be

FIG. 52. Affection in young children. *(From L. H. Meek, Your child's development and guidance told in pictures. Lippincott,* 1940. *Used by permission.)*

caused largely by a change in the father's conduct. This is borne out by the children's statement to the effect that they liked best the parent who catered to their material wants, expressed affection for them, played most with them, and punished them least.

Affectionate Responses. Childish affection expresses itself by hugging, patting, and kissing the loved object or person. The toys of which the child is fond are hugged and patted until they are literally hugged to pieces. Kissing is a less frequent expression of affection in young children than hugging and patting but, as the child approaches the adolescent years, his affection is more and more expressed by wanting to kiss or

the person for whom he has a feeling of deep affection. f's affectionate response to an older sibling is illustrated in

age during the childhood and adolescent years, there is a be with the loved person and to assist him in whatever he is During adolescence, there is a marked desire to imitate the loved one in every possible way. Typically, the little child takes with him, wherever he goes, a toy for which he has an affectionate feeling, and he continues to rank it among his favorites even after it is old and shabby.

Affectionate responses in sisters, McFarland (1938) noted, include physical advances, such as patting, hugging, and kissing; verbal expressions, as love names or endearing statements; and attempts on the part of the older sisters to protect and help the younger sisters. The verbal expressions of affection were used mostly by the older sisters who had the superior position of an adult in their relationships toward their sisters. Among nursery-school children, Murphy (1937) found the freest and most frequent expressions of affection occurred in the lower economic group. Among all types of children, however, spontaneous expressions of affection occur occasionally when children are with their playmates.

7. Curiosity

Stimulus to Curiosity. Interest in the environment is limited during the first two or three months of life unless a strong stimulus is directed toward the baby. After that, anything *new* or *unusual*, which is recognized as such by the child, is certain to arouse the curiosity of the child. This in turn motivates him to explore until his curiosity has been satisfied.

Responses in Curiosity. Curiosity is, in the case of young babies, expressed by tensing the face muscles, opening the mouth, stretching out the tongue, and wrinkling the forehead. At first, a slight startle may accompany curiosity, suggesting that the baby is frightened by new and unfamiliar objects. Soon, however, as he explores the object, the startled expression gives way to pleasure and laughter.

By the second half of the first year, bodily expressions of interest occur in the form of stretching the body, leaning toward the object, and grasping for it. As soon as the baby gets hold of the object, he begins a more thorough exploration by handling, pulling, sucking, shaking, and rattling it. Thus, the different sense organs are stimulated, and the baby discovers meanings through the use of these channels. This sensory-exploration-motor-manipulation period extends from the middle of the first year to the third or fourth year. During that time, the little child breaks and harms many objects, not intentionally, but because his relatively poor muscle coordination makes him clumsy and awkward.

Later Responses. Social pressure, in the form of admonitions and punishment, acts as a check on the satisfaction of curiosity through direct exploration. Therefore, as soon as the child is old enough to put words together in sentences, he asks *questions* about the things that arouse his curiosity. The "questioning age" begins around the third year and reaches its peak at approximately the sixth year, when the child enters school and begins his formal education. How important a role questioning plays in the satisfaction of the child's curiosity depends to a large extent upon the satisfaction the child receives from those whom he questions.

When the child is old enough to read without giving too much attention to the mechanics of reading, he discovers that he can satisfy his curiosity through *reading* about things for which he has not been able to find an adequate solution in direct exploration or questioning. Motivated by the desire to explore, the child of eight or nine years of age devotes much of his leisure time to reading. Through the adolescent years, when curiosity about sex and other matters which present new problems to the adolescent arises, reading proves to be a very satisfactory supplement to—or substitute for—the methods of exploration used in earlier years.

SENTIMENTS

Sentiments are *complex emotional patterns* with an intellectual core or foundation. They are attached to persons, things, or situations and are developed as a result of the child's experiences. They are thus learned reactions and are generally weaker than the emotions already described.

Social Sentiments. Sentiments begin to develop early in the school life of the child. The first sentiments to make their appearance are the *social sentiments*, or sentiments built up around the individuals or situations belonging to the gang life of the child. Such sentiments as group loyalty or revenge, patriotism, school spirit, and pride in one's friends are not only present during childhood but they play a very important role in the child's emotional life.

Aesthetic Sentiments. During adolescence, the finer, *aesthetic sentiments* make their appearance. The social sentiments weaken at this age and are, to a large extent, replaced by the sentiments related to the love life and religious interests of the adolescent. Family pride; love for friends of the same or opposite sex; love of art, literature, or music; and religious fervor are characteristic sentiments of the adolescent years. The intellectual core of these sentiments is stronger and the emotional accompaniment weaker than that of the social sentiments. They are,

however, more like the sentiments of adult life than of the early childhood or school years.

FACTORS INFLUENCING EMOTIONALITY

In every child, as in every adult, the state of emotionality varies from time to time, depending on such factors as health, time of day, and environmental influences. Any attempt to control the emotionality of the child must take into consideration these factors because emotional control can be brought about best by eliminating the factors which act as predisposing causes. The most important of the factors predisposing the child to emotionality are the following:

1. Fatigue. When the child becomes tired, owing to too little rest, too much excitement, inadequate food for his needs, or other less common causes, he is predisposed to irritability and temper tantrums. This holds true for every age during the childhood years but is especially serious in the early years of life when the child does not recognize fatigue as such and continues to play actively instead of resting at the time when he really needs to rest.

2. Poor Health. When the child is in poor health due to malnutrition, digestive disturbances, diseased tonsils and adenoids, defective eyes, poor teeth, or colds, he is predisposed to emotionality, just as in the case of fatigue.

3. Time of Day. Because the child becomes more fatigued at certain times of the day than at others, it is not surprising to find that these times are accompanied by pronounced emotional disturbances. In babies and young children, the periods preceding the scheduled eating and nap times are the ones when emotionality is apt to be at its height. If the child's schedule is interfered with, and eating or nap time is delayed, the period preceding it is generally one of pronounced fussiness and irritability.

4. Order of Birth. First-born children are, proverbially at least, "spoiled." It is therefore not surprising if the oldest child of a family is more emotional than the later-born children. The first-born has learned from experience that the use of the emotions is a quick and easy way to get what he wants, and, as a result, the child develops the habit of giving way to emotional outbursts. Similarly, the youngest child of a family, if he has been "babied" by parents and older brothers and sisters, develops habits of emotional reactions as the easiest method of dominating the social situation.

5. Parental Attitudes. Parental attitudes are often responsible for a child's emotionality. Cummings (1944), from a study of English school children, found that emotional symptoms were most common among children whose parents neglected their children somewhat or were away

from home a great deal (at work), who were overanxious about their children, who constantly talked about their ailments, or who made babies out of them by putting on their coats, etc., and those who "spoilt" their children by giving way to them too much or who made them the center of home life. Overprotected children, Cummings found, showed more nervous symptoms, while neglected children were more often anti-social and aggressive in their emotional behavior.

According to Sloman (1948), emotional problems are common in "planned-for" children. More than half of the children with emotional problems who were studied by Sloman were children of compulsive perfectionistic mothers, who would tolerate nothing but perfect behavior from the children for whom they had so carefully planned. About one-third were children who were planned to save a marriage which was failing and, because this did not happen, they were rejected. The rest of the "planned-for" children disappointed their parents because they were not of the hoped-for sex.

6. Environment. The last and one of the most important of the factors influencing the emotionality of the child is his social environment. The way in which children are handled by parents and nurses, the amount of excitement their environment affords, the number of restraints placed upon their activities, the type of discipline used to control their behavior, and the ease with which they can get what they want from others, all contribute to emotionality. In addition to this, the child can develop habits of emotionality from being associated with people, whether adults or children, who are themselves highly emotional. Contact with an emotional person for several hours will tend to increase the child's emotionality, while contact with a calm, unemotional person results in quiet, unemotional behavior.

Grade placement, Turner and Eyre (1940) found, affects the emotional stability of elementary-school children. When a child is over-aged for his grade, he tends to be emotionally unstable. Common experience with school children shows this to be true also of bright children who are younger than their classmates. Because they become the target of the older children's teasing, they soon develop feelings of insecurity, with the accompaniments of emotional tension.

Lee's (1932) observations of nursery-school children revealed that environmental conditions played an important role in the mood shifts of the children. There was a tendency for children to be more stable and happier when at play than if urged by adults to do such things as take off coats, wash hands, etc. The presence of mothers at school also resulted in emotional instability.

To determine what role general social environment plays in the emo-

tional stability of children, Springer (1938) gave the Brown Personality Inventory for Children to a large number of school children of different social levels. He found that emotional stability was closely related to the general social status of the individual. Children from a poor general social level were found to be more maladjusted and more emotionally unstable than those who came from good, middle-class homes. The middle-class group was more stable and made a more satisfactory adjustment.

TEXT-FILM

The following McGraw-Hill Text-Film is recommended for use with Chapter VIII.

Children's Emotions (16mm sd MP 2 reels). This discusses the major emotions of childhood; fear, anger, jealousy, curiosity, and joy. Narrator points out the major causes of fear at different age levels; "suddenness" of any kind, loud noises, "night" noises—all with the caution that fear is natural but must not be allowed to become a habit. Careful teaching can prevent or lessen most childhood fears. Childish anger, too, is natural, but the same precaution holds. Humor is the best antidote, combined with understanding of the baby's inability to do things for himself and the intensity of his desire to try. Jealousy is best dealt with through consistent discipline plus genuine understanding and affection. Curiosity should not be discouraged, but fostered, for it is the basis of all the child's future education. Happiness can be the child's natural element—it is the result of physical well-being added to reasonable discipline and loving understanding.

Silent follow-up filmstrip based on material contained in the motion picture, offers opportunity for review, testing, and further discussion.

CHAPTER IX

SOCIAL DEVELOPMENT

Influence of the Social Group. Every child, like every adult, is dependent upon other people for his existence. This dependence is complete at birth and during the early years of babyhood. As the child becomes older, he becomes less dependent upon the social group. Nevertheless, he still needs the group and cannot live without contacts with others. During each succeeding year his relations with others become more complex, and he must come in contact with more people, as well as with people of different types. Most of these people do not have the personal interest in him that his parents have, and consequently they do not try to make his adjustments to them easy, as is usually done at home.

Not only is the child dependent upon the social group but, of even more importance, the social group upon which he depends determines to a large extent what type of individual he will be. Because he is plastic, both physically and mentally, his development can be influenced and molded into a pattern determined by the members of the group with whom he is most often associated. At no age is he free from the influence exerted by his associates. This influence is especially pronounced during the early years of life, because this is the time of greatest plasticity. Because the first social group for a child is his family, that group plays an important role in establishing his attitudes and habits. Furthermore, it influences his approach to other groups with which he will come in contact as he grows older. Hattwick (1940) has pointed out that the family group contributes a readiness to belong or to feel that he is an accepted part of the subsequent groups which he enters. If he is accepted at home, the feeling of belonging will carry over to other groups. The second contribution is an ability to appreciate and understand people of all kinds through contacts with relatives and neighbors. From groups of ages and levels of development similar to his own, he learns to accept criticism, suggestions, adjustments and limitations.

From a study of nursery-school children, Portenier (1943) concluded that the home background is the

most important psychological field in determining the behavior of the preschool child. . . . The essential factor in determining a child's behavior and attitudes

does not seem to be closely related to any one particular aspect of the home or other environmental influences. They seem rather to be determined by the particular nature of the child and his relation to the total character of the psychological field in which he must function.

The influence of the group and the adjustment the child makes to it depend to a certain extent upon how acceptable the child is to the group. The popular child will be influenced by the group more than the child who finds himself an outcast from the group, and in a different manner. Jack (1934) for example, found that children showed more ascendant behavior and greater self-confidence after they had mastered the skills which put them in positions of superiority.

Meaning of "Social" Development. *Social development* means the attaining of maturity of social relationships. This involves the development of new types of behavior, a change in interests, and the choice of new types of friends. The *social* individual is one who not only wants to be with others but who wants to do things with them. In contrast to the social individual is the *gregarious* one who craves the presence of others, is lonely when away from them, but whose desire for companionship is satisfied when he is in the presence of those of his own kind, regardless of contacts of any sort. Gregarious behavior is characteristic of most animals of the lower levels, while social behavior is characteristic of higher animals and of human beings.

No child is born social, in the sense that he can get along well with others. He must learn to make adjustments to others, and this ability can be acquired only as a result of opportunities to be with all types of individuals, especially during the years when socialization is an important phase of the child's development. Like all development, this requires planning and guidance on the part of those who are in charge of the child if the most desirable results are to be achieved. Because the social group exerts so marked an influence on the personality of the child, it is obvious that the members of the social groups should be selected because of the desirable influence they can exert over the child. This guidance must come from adults, because the child is too young and inexperienced to be able to guide his own development in the most advantageous way.

THE PATTERN OF SOCIAL DEVELOPMENT

Social development follows a pattern, in an orderly sequence, not only in the type of social behavior displayed at each age but also in the type of companions selected. This means that normally every child should pass through certain phases of becoming socialized at approximately the same age as other children pass through the same phases. As is true of other types of development, bright children are accelerated in this

development, while dull children are retarded in their progress toward social maturity. Knowing what the pattern of social development is, one can readily predict that at a certain age the child will be timid in the presence of strangers; at another age, he will crave the companionship of individuals of his own age and sex; while at still another age, his interests will be centered on members of the opposite sex.

Early Sequence. Studies of large groups of nursery-school children have revealed marked age levels of social adjustment. Blatz and Bott

TABLE XXXVI. GENETIC DEVELOPMENT OF SOCIAL BEHAVIOR

Behavior items	Age, weeks													
	4	6	8	12	16	20	24	28	32	36	40	44	48	52	56
Responds to smiling and talking	8	62	63												
Visually pursues moving person	12	69	64												
Knows mother	3	21	39	81	92										
Sobers at strangers	0	3	4	35	56										
Turns head on sound of voice	0	3	26	42	50	100									
Accepts strangers	100	100	100	100	80	61	52	59	41	39	39	26	18	18	14
Withdraws from strangers	0	0	0	0	19	8	24	16	47	42	19	48	44	30	9
Adjusts to words	...	...	...	...	0	8	12	16	47	68	75	94	82	89	73
Responds to "bye-bye"	...	...	...	...	0	3	3	3	13	35	53	65	38	59	27
Adjusts to commands	...	...	...	...	0	0	0	3	22	23	31	55	56	73	50
Responds to inhibitory words	...	...	...	...	0	0	0	3	25	23	28	45	44	52	33
Responds to "So big"	...	...	...	...	0	0	0	0	6	7	8	26	18	34	
Elicits attention	...	...	...	...	0	0	0	0	9	16	14	26	27	53	50
Plays patacake	...	...	...	...	0	0	3	6	19	23	25	42	27	50	9
Plays peekaboo	...	...	...	...	0	6	6	0	9	13	11	13	9	25	9

Source: GESELL, A., and THOMPSON, H. *Infant behavior, its genesis and growth.* New York: McGraw-Hill, 1934, p. 258. Used by permission.

(1927) noted that, while the two-year-old is solitary in his play, nevertheless he is influenced by older children to the extent that he imitates their behavior both in play and in his conduct. The three-year-old plays with other children and shows the rudiments of team play with definite cooperation and a differentiation of function in the play.

Gesell and Thompson (1934) studied social behavior in the first year by testing 107 babies, seven at each age level from the fourth to the fifty-sixth week of life. In Table XXXVI are given the percentage of responses at each age level.

The two-year-olds (2:0 to 2:6 years) studied by Hattwick and Sanders (1938) were found to be unsocial and lacked social interest, owing largely to their lack of physical, motor, and emotional control; 2½-year-olds (2:6 to 3:0 years) refused to share toys with others, grabbed toys from

other children, ignored requests, and refused to comply. The four-year-olds, on the other hand, showed for the first time that they were influenced by the social group. They were conscious of others and of their opinions; they looked for praise, criticized others, and tried to gain attention by "showing off."

Expectations of Social Behavior. Because the pattern of social development is so similar for all children, the people about him have come to expect certain behavior from the child at certain ages. Murphy, Murphy, and Newcomb (1937) have listed the following sequence of responses which the growing boy is expected to display:

1. He is expected to be cute and beautiful, the idol of the family, from birth to two or three.
2. He is expected to keep out from under foot and give the adults a chance to take care of the new baby (this expeience may come at any time from two to six in most families).
3. He is expected to sit still in school and learn to read and do numbers (beginning elementary school).
4. By his own age group he is expected to prove that he is male and is independent of the grown-ups (six to twelve).
5. The girls expect him to learn to dance, and look nice, and drive a car (early adolescence).
6. The school expects him to throw all his energies into winning for the ——— High School. His parents expect him to get the best marks.
7. He is expected to find a job, either to support himself or to contribute to the expenses of college or vocational school in order to prepare for a job later. (Quoted by permission.)

Baby hood

PRESOCIAL BEHAVIOR

At birth, the baby is nongregarious, as may be seen in his complete lack of interest in people. So long as his bodily needs are taken care of, he does not crave or even miss the companionship of others. He does not distinguish between people and inanimate objects. He merely responds to stimuli in his environment.

Karl Bühler (1930), reporting an experimental study of babies in the first year of life, maintains that much which is popularly regarded as social behavior is in reality uninfluenced by social contacts. The crying baby can be quieted by lifting up the bed on which he is lying without disturbing him or without making any sounds whatsoever. Change in position or in auditory stimulus can be responsible for the crying of the baby and not the presence of human beings. Likewise, he demonstrated that the baby could be quieted when caressed by a hot-water bottle or a soft cushion just as easily as when caressed by the mother.

During the first two months of life, the baby's reactions to external stimuli come only when the stimuli are intense, as in the case of loud

noises, bright lights, or strong touch stimuli. He does not even distinguish between the human voice and other noises. In fact, he responds more often to noises than to the human voice because of the greater intensity of the former. He, likewise, gives similar responses when touched by a person or an object.

Soon, however, he learns to distinguish between people and inanimate objects because of the prominent role people play in his life. From the beginning of the third month, gregarious behavior supplants nongregarious. The baby shows contentment when in the presence of others but is discontented, unhappy, and "fussy" when by himself. At this time, also, there is a beginning of true social behavior.

BEGINNINGS OF SOCIAL BEHAVIOR

Social behavior begins when the baby first distinguishes between *persons* and *objects*. Just when this occurs is difficult to determine exactly and must be judged in terms of the overt responses of the baby. Because the environment of little babies is, on the whole, somewhat similar in major features, the beginnings of social behavior vary less from one baby to another than later on, when individual differences in environment are of a more pronounced type. For that reason, the pattern of social behavior for the first two years of the child's life is similar, in most respects, to that of other children of the same age and intellectual level.

Reactions to Adults. The first social responses of the baby are to *adults*. This is due to the fact that normally the baby's first social contacts are with an adult. Studies of groups of babies by Bridges (1931), Bühler (1930), Gesell (1940), Hetzer and Tudor-Hart (1927), Jones (1926), Shirley (1933), Washburn (1932), and other have shown what are the characteristic forms of social behavior that appear in the early months of babyhood. Positive social behavior predominates at this age, as is seen in the following pattern of responses.

By the age of one month, the baby will respond to the human voice by sucking movements. During the second month, the baby will stop crying as soon as he is picked up (Bühler, 1930). The baby also turns when he hears a human voice. By the end of the second month, social smiling, or smiling in response to the smile of an adult or a clucking sound, appears. Jones (1926) observed social smiling first in the babies she studied at thirty-nine days, in 50 per cent of the babies by the 68th day, and in 100 per cent of them by the ninetieth day. Hetzer and Tudor-Hart (1927) noted the reactions of young babies to a number of auditory stimuli, including angry voice, singing, whistle, knocking, handclapping, and the noise of a spoon. They found that at two months of age, babies

smiled more in response to the voice and exhibited greater acuity for this sound than for other stimuli.

Washburn (1932) reports that smiling in response to social stimulation, such as peekaboo games, appears first around the eighth week, while laughing makes its first appearance at about the twelfth week. Dennis (1935*c*) found that under experimentally controlled conditions, smiling most often occurs when an adult bends over the baby to administer some attention. Social smiling then becomes a conditioned response to any stimulus which brings about a cessation of unrest, fretting, and crying.

During the third month, babies stop crying when talked to, but they can also be quieted when their attention is diverted by a rattle or some other mechanical device. At this age, they show a beginning of interest in people by crying when a person leaves them. They likewise show displeasure when losing the glance of an adult. The baby soon learns that crying brings attention and thus, in a few weeks' time, unless definite steps are taken to prevent it, he dominates the household by this method. At this age, the baby shows by his behavior that he recognizes the mother or nurse.

In the fourth month, the baby makes anticipatory adjustments to being lifted, shows selective attention to the human face, looks in the direction of the person who leaves him, smiles in response to the person who speaks to him, shows delight in personal attention, and laughs when being played with. From the fifth or sixth month, the baby reacts differently to smiling and scolding and distinguishes between friendly and angry voices. Bühler and Hetzer (1928) found no differential responses to kind and scolding voices, smiling and angry facial expressions, or angry and threatening gestures, until the baby was five to seven months old. Then the babies studied showed an understanding of the diverse expressions, by crying in response to unfriendly expressions and smiling to friendly ones. To attract the attention of persons near or to entertain them, babies, according to Kelting (1934), display the following types of behavior: bouncing up and down, breathing hard, making a "funny mouth," wrinkling up their noses, waving their arms, kicking, coughing, and blowing.

At this age, babies recognize familiar persons with a smile, laugh in peekaboo play, imitate simple acts, such as the clapping of hands and waving of arms, resent opposition or interference, and show for the first time definite expressions of fear of strangers. Spitz (1946) reports that, after the sixth month, the smiling pattern as a response to any and everybody disappears. This, she maintains, is an immensely significant step in social development, because it marks the beginning of differentiation between "friend" and "stranger." It shows that the baby is

capable of perceptive discrimination, no longer reacting to human beings in general but to emotionally welcomed individuals.

By the eighth or ninth month, the baby attempts to imitate the speech of others, by repeating syllables heard, and likewise imitates simple acts and gestures observed in others. At twelve months, he can refrain from doing things in response to "no-no" or some other form of request, and at the same age he shows definite fear and dislike of strangers by crying or drawing away when a stranger approaches. Negativism, in the form of contrariness and stubborn resistance to the requests or demands of adults, is a normal reaction at the age of eighteen months. At two years, the child can cooperate with adults in a number of routine performances.

Reactions to Other Babies. Social reactions to individuals of the same age as the baby lag behind the social reactions to adults. Observations by Bridges (1933), and Maudry and Nekula (1939) have revealed that the first indication that a baby perceives another occurs between the ages of four and five months, when the baby smiles at another child or shows attentive interest in the cry of another. From six to eight months, lack of interest in other children leads to few contacts with them. Friendly contacts consist of looking at, smiling at, and reaching out and grasping another child, while unfriendly contacts consist of blind attempts to get hold of material from another child, often resulting in impersonal fights. Between nine and thirteen months, the baby explores other babies by pulling their hair or clothes, imitates the behavior and vocalization of others, and shows for the first time cooperation and social use of material. Fighting becomes intense and personal. When a toy is taken away by another, the baby becomes angry, fights, and cries.

Social reactions toward other children during the second year develop rapidly. From the thirteenth to the eighteenth month, the young child's interest shifts from play materials to the playmate. There is a decrease in fighting for toys and an increase in cooperative use of them. When a toy is taken away, the child is apt to fight by pulling hair or biting. He smiles and laughs in imitation of another child. During the last half of the second year, the child is definitely interested in play with children, and play materials are now regarded as a means of establishing social relationships. The child cooperates with his playmate, modifies his behavior to adjust to his playmate's activity, and engages more frequently in games with other children. Even at this early age, young children are united as a group in their behavior on certain occasions, as when waiting for a nurse's signal before handling their spoons (Bridges, 1931).

Early Forms of Social Behavior. As a result of contacts with others, certain forms of social behavior begin to develop at this age. In order to

become a part of the social group, the baby *imitates* those about him, both adults and other babies. He first imitates facial expressions, such as laughing and crying, around the third month, then gestures and movements, as waving bye-bye, shaking the head, or throwing a kiss, from the age of six months, and still later, around the twelfth month, he imitates the sounds heard in his environment, like "choo-choo," "tick-tock," "ding-dong," or the simple sounds in the speech of others. From this as a foundation, speech is built up. During the second year, when the baby learns to feed himself, dress himself, manipulate his toys, and, in general, act like those around him, it is through imitation that this behavior is possible.

By the fifth month, the baby begins to distinguish familiar people from strangers. This results in *timidity* and *shyness* in the presence of strangers, appearing first around the sixth month and generally pronounced from the ninth to twelfth months, the period commonly known as the "strange age." At this time, the baby reacts to strangers with a solemn stare, puckered lips, whimpering, and crying. He hides his head and clings to the person holding him. At the same time, he continues to be friendly with those whom he knows. Whenever, at this age, the baby is taken to a strange room or new surroundings, he will react with fear, just as he does when placed with strange people. Even a familiar person in an unfamiliar costume, the nurse in her street clothes instead of the familiar white uniform, will bring forth reactions of timidity on the baby's part.

Toward the end of the second year, there is another "strange age," similar to the one just described. How pronounced it will be depends largely upon the opportunities the baby has had to come in contact with different people and new environments. At this time, there is an ostrich-like desire to hide from strangers, shown by the common reaction of burying the head in the mother's lap, hiding behind a piece of furniture, shyness about accepting things from strangers, and refusal to speak, even to say "good morning." This self-conscious, shy behavior, Shirley (1933) found, is especially pronounced between sixty-six and eighty-six weeks of age.

Rivalry, especially in play with other children, appears during the second year. The baby tries to take the toys of others, not because he wants them but because it gives him pleasure to assert his superiority in this manner. This generally leads to crying on the part of the child who has been deprived of his toy. Rivalry also may be seen in the bid for attention and affection of an adult which, if not satisfied, leads to jealousy on the child's part. Rivalry, Bühler (1930) found, does not

appear in the behavior of babies of ages four to twenty-two months, if their age difference exceeds 2½ months.

Social cooperation, which, like rivalry, is essential in social contacts, appears first in the baby's play with adults in peekaboo and similar games. Because the adult is willing to do the lion's share of giving and taking, cooperation is successful. But with others of approximately the same age the baby cannot cooperate for more than a few minutes at a time, with resulting inability to play with other little children successfully at this age.

SOCIAL BEHAVIOR IN EARLY CHILDHOOD

(In the preschool years of early childhood, from ages two to six years, children progress from being relatively unsocial to distinctly socialized individuals) During this short period of time, the child learns to adapt himself to others and to cooperate in play activities in which several children are involved. He consequently is prepared for active participation in the group when his school days begin.

Opportunities for social contacts are important in the development of social behavior in young children. In a study of kindergarten children, White and Williams (1939) noted an increase in total number of social contacts for each child in the spring, as compared with those made in the fall. Mallay's (1935) observations of nursery-school children showed similar results. The four-year-olds were more successful than the two-year-olds in establishing social contacts.

Relations with Adults. (The young child not only spends less time with adults than he did when he was younger but he also derives less enjoyment from them.) With each succeeding year, his interest in playmates of his own age increases, and with this comes a decrease in interest in adult associations. Observation of the play activities of young children showed Bott (1928) that talking was the most frequent form of social contact both among children and in their relationship with adults. When social relations were studied to discover in how many instances the child was active and in how many passive, it was found that the number of relations in which children were active was slightly larger, both in their relations with other children and with adults, than the number in which they were passive.

The attitude of young children toward adults has been studied by Bridges (1931) in nonexperimental situations involving nursery-school children. At the age of two years, the child is dependent, passive, and relies on adults for attention and assistance. By the age of 2½ to 3 years, the child begins to resist adult influence and wants to be inde-

pendent. He is therefore self-assertive and difficult to handle. After four or five years, however, he gradually becomes cooperative and friendly, seeking the approval and trying to avoid the disapproval of adults.

Relations with Other Children. Before the age of two years, young children engage in solitary play. This is true even though they may play in the same room and with toys similar to those used by other children playing there. This is *parallel play,* in that there is no interaction taking

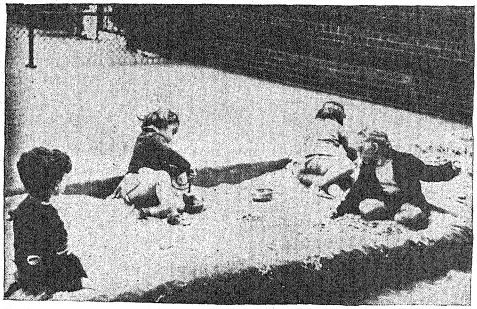

FIG. 53. Parallel play. (*From F. J. Brown, The sociology of childhood. Prentice-Hall,* 1939. *Used by permission.*)

place even though the activity is similar for all. The only contact with others consists of imitating them, watching them, or attempting to take away from them a toy which has attracted the child's attention. Two or three children may engage in parallel play at this age, but rarely more than that. Figure 53 shows characteristic parallel play. At this age, children relatively more often resist the social advances of other children than is true of the older ages (Beaver, 1932).

(From the age of three or four years, due to increased ability to control the body, to handle objects, and to talk, there is an increase in social play. Little children now begin to play together, to talk to one another while they play, and to select from the children present those with whom they prefer to play.) The size of the play group increases with age, from two members at three years to three or four members at six years. Even then, the group splits, and the children play in twos. Approximately two-thirds of the two-child groups are unisexual (Parten, 1932). The most common behavior of these groups consists of watching each other,

holding conversations, and making verbal suggestions (Updegraff and Herbst, 1933).

Social Participation. Parten (1932, 1933) studied the social participation of 42 children ranging in age from two to five years during 1-hour free-play periods in nursery school, when the children were allowed to play with any toys, with other children, or alone, as they wished. Parten used the method of repeated short samples and observed each child daily for one minute. To avoid errors of sampling, the hour was divided into 5-minute intervals, and observations were rotated so that each child was observed an equal number of times during the first 5 minutes, the second 5, the third 5, etc. She found the following forms of social participation:

1. *Unoccupied behavior*, in which the child watches anything of momentary interest and plays with his body if there is nothing exciting taking place.
2. *Onlooker behavior*, in which the child watches other children at play. The child may talk to the children at play or offer suggestions but he himself does not enter into the play.
3. *Solitary independent play*, in which the child plays alone and independently with toys different from those of other children and without reference to what they are doing.
4. *Parallel activity*, in which the child plays independently but with toys like those used by the other children. He plays beside other children rather than with them.
5. *Associative play*, in which the child plays with others. In this play, all other children in the group engage in similar if not identical activity.
6. *Cooperative or organization supplementary play*, in which the child plays in a group organized to make some material product or to play some game. The group is controlled by one or two members who direct the activity of the others.

Only the youngest children of the group, those from two to three years of age, were found to engage in unoccupied behavior. At 2½ years, solitary play occurred more frequently than at any other age level. Likewise, onlookers were more often found in the groups ranging in age from 2½ to 3 years. This, Parten explained, seemed to be caused by the fact that children of this age had overcome the initial shyness resulting from being placed with strange children and had begun to take an interest in the activity of the group though not actually participating in it.

The most common of all of these forms of participation in early childhood was parallel play, observed most often among the group of two-year-olds. Cooperative or organized supplementary activity was not frequently found up to the age of three years, owing to the child's limited speech which makes cooperative play difficult or impossible.

Parten reports that there is a decided decline in the importance of solitary play as well as of onlooker behavior after the age of 2½ years.

If interested in an activity, children engage in it rather than watch it. Assertive group play, and also organized supplementary or cooperative activity, showed a marked increase beginning with the third year and accounts for the popularity of such games as playing house or playing store.

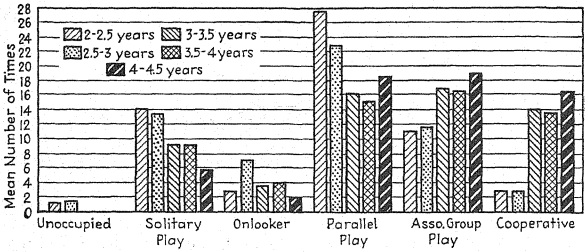

FIG. 54. Types of social participation at the preschool age. (*From M. B. Parten. Social participation among preschool children. J. abnorm. soc. Psychol.* 1932, **27**, p. 260. *Used by permission.*)

Forms of Social Behavior. As a result of early social contacts with children and with adults, the child begins to develop types of social behavior which will prove to be invaluable to him in late childhood, as well as in mature life. Because, as a baby, he was helpless and required constant care, every young child is self-centered. Play with other children soon teaches him to adjust himself to group life, to give and take, and to share his possessions with his playmates. Through imitation of the actions, words, and emotions of others, the child tries to make himself like his playmates and to conform to a pattern approved by the group to which he belongs. The child is highly sensitive to social praise and blame, whether it comes from adults or from other children. He therefore tries to regulate his conduct to win praise and avoid disapproval.

This fact is well illustrated in a study made by Marinho (1942), which showed how a child's food preferences are influenced by his desire to win the approval of the group, especially of the leader. Marinho noted that the example of the leader caused not only immediate but lasting modifications in the child's original taste preferences.

(*Negativism.* Negativism is a form of behavior in which the child shows resistance to adult authority. It is commonly called "stubbornness" or "contrariness," and it makes young children difficult to manage.) Resistant behavior is first noticeable at about eighteen months of age

and reaches a peak at three years. It is so common at this age that it may be regarded as normal. After the fourth year, there is usually a decline in negativism, due partly to social influences, partly to the fact that the child learns that it is to his advantage to comply, and partly to the fact that the adults in his environment have learned to respect the child's desires.

Reynolds (1928) noted that negativism is not significantly related to intelligence. While Caille (1933) found no sex differences in resistant behavior, Levy and Tulchin (1925) reported the peak of resistance for boys occurs at thirty months and for girls, at eighteen months. Girls showed more resistance than boys and withdrawal reactions were more frequent among them than among the boys.

The methods of resistance children show in negativism, Reynolds found, ranged from simple opposition to active execution of the opposite of what is expected. Rust (1931) reported three types of resistance: silence, verbal responses, and motor responses. According to Caille, physical resistance decreases with age, while vocal resistance increases. It was also found that children resist other children much more frequently than they resist adults. When with others, resistance occurs on an average of once in approximately 11 minutes per child.

Negativism, Plaut (1941) found from studying the case histories of many children, shows itself in at least three phases through which the child goes in achieving an adult adjustment. The earliest is a phase of physical withdrawal or "physical tenseness," which is the opposite of "cuddliness." The next appears between four and six years of age and is more verbalized in form.

It is characterized by using "no" as an answer to all sorts of suggestions, questions, and amiable approaches, together with the growing use of protective lying. The third stage begins around the age of eight years and is well developed by twelve or thirteen years. In this stage, the child has a blasé protection against outsiders and a sort of "water off a duck's back" attitude. His parents find he will never listen to reason.

Negativism is a product of social situations. It occurs as a result of the aggressive use of discipline or an intolerant attitude toward normal childish behavior on the part of adults. It generally appears in connection with the established home routine, when the child refuses to comply with the adult's requests that he carry out a certain activity at a scheduled time, such as coming to the table for supper when his plate is placed on the table. It also appears in situations involving strangers, whether the situation be a social call or an intelligence test. Rust (1931) noted that among three-year-olds a resistant attitude appeared when

the intelligence test was first presented. It was especially pronounced in the more difficult tests or those involving verbal responses.

To test the theory that the amount of frustration resulting from adult interference is positively related to the amount of negativistic behavior exhibited by nursery-school children, Frederiksen (1942) measured negativism by means of a series of standardized test situations and through observations. One group of children (frustrated group) was submitted to a teaching method designed to produce mild frustration, while a second group (free group) was taught in such a manner that frustration would be reduced. The free group, he found, showed a decrease in the amount of negativism, especially to adults, while the frustrated group showed a slight increase, especially to children.

Rivalry. Rivalry is characterized by a desire to excel, or to outdo others, and is always stimulated by another person. It is, therefore, a form of social behavior. Competition for prestige is apparent at the age of four years. This is shown in the child's bragging about his being first in different activities and about his material possessions. Rivalry and quarreling, Gottemoller (1943) found, are more common in the presence of a third person, especially an adult, for whose attention the children compete.

In an experiment in which children inserted pegs in a board, Leuba (1933) found no indication of rivalry in the two-year-olds. There was no reaction to the other child engaged in the same task except to look at him occasionally. A year later, rivalry made its first appearance, but it was eclipsed by other social attitudes, especially imitation. The children were found to do less work in pairs than when alone, because the other child proved to be a source of distraction. At five years of age, on the other hand, rivalry proved to be a dominant attitude when the children worked together, and their output increased as a result of this.

Studies of kindergarten children have convinced Greenberg (1932) that the competitive spirit, which leads to rivalry with other children, develops according to a pattern in the child's relations to play materials. In the two- to three-year-old group, there was no competition, only interest in the play materials. Some competition appeared in the three- to four-year-old group, owing to the fact that by that age the child had a better understanding of excelling and was interested in excelling. At four years, competition made its appearance, and the child showed a desire to excel. At least 90 per cent of the six-year-olds studied by Greenberg had a well-developed competitive spirit.

Philp (1940) paired kindergarten children with strangers and friends at tasks in which they dropped marbles into boxes through small holes. Two of the tasks were competitive and two were cooperative in nature.

The children were found to be quieter when competing or cooperating with strangers than when doing so with friends. When working with their friends, they were noisy and excited.

Quarreling. In spite of the young child's desire to play with others, there is much quarreling. This is due primarily to the fact that children

FIG. 55. Quarreling during play is very common in childhood. (*From L. H. Meek, Your child's development and guidance told in pictures. Lippincott,* 1940. *Used by permission.*)

have not yet learned to cooperate satisfactorily in their play, as may be seen in Fig. 55. Quarreling takes the form of destruction of the other child's work, taking away the toys the other child is playing with, screaming, crying, and actual bodily attack, such as hitting or pushing. When a new toy is presented, quarreling is sure to arise, unless there are enough toys so that each child may have one. Conflicts among children last only a short time, and when they are over, the children are as friendly as before the quarrel started. Quarrels and friendships go hand in hand. Even the best of friends among young children quarrel.

Studies of quarreling among preschool children have revealed that many factors influence the frequency and severity of the quarreling. In young children, conflicts over property are greater than conflicts in which an attack on the child's person is the starting point (Murphy, 1937). Green (1933*a*) found that the type of activity engaged in was a factor of importance in the quarrels. In the table below are given the percentages of quarrels accompanying different types of activity and the percentages of quarrels when the activity involved play with companions.

TABLE XXXVII. TYPES OF ACTIVITY AS A FACTOR IN FRIENDSHIPS AND QUARRELS

Activities	Percentage with companions	Percentage involving quarrels	Quarrels as percentage of play with companions
1. Dramatic play	93	20	21.6
2. Body activity with apparatus	64.5	12.95	20.1
3. Destruction and meddling	63.5	15.8	25
4. Sand play	62.5	23.6	37.6
5. Quiet intellectual pursuits	61.5	12.5	20.4
6. Construction work	60.5	20.2	33.6
7. Helping	55.5	11.1	20
8. Bodily activity without apparatus	48.5	9.5	19.5
9. Play with toys	47.5	15.6	32.8
10. Fine manipulation	42.3	9.8	23.3
11. Inactive pursuits	33	10.8	32.8

SOURCE: GREEN, E. H. Group play and quarreling among preschool children. *Child Develpm.* 1933, **4**, 306. Used by permission.

From the above table it may be seen that the activity that called forth the most quarrels in relation to the number of times it was participated in was sand play. Quarrels arose nearly one-fourth of the time. Constructive work, play with toys, and destructive and meddlesome activities also led to many quarrels. All of these activities involve play with comparisons. The least amount of quarreling, on the other hand, occurred in activities in which companions played a relatively unimportant role, as bodily activity with apparatus or quiet intellectual pursuits. The aggressive behavior of nursery-school children, Appel (1942) observed, most often takes the form of desire for the possession of property and unprovoked attacks upon the person of another.

The younger nursery-school children, Muste and Sharpe (1947) found, have fewer opportunities for aggressive behavior than the older children, because they tend to have only brief contacts with the other children. Among the older children they noted a wide range in the frequency with which aggression occurred. Four-year-olds, Appel (1942) noted, carry on

their quarrels longer than do the two-year-olds. Furthermore, the older children displayed more fear in their quarrels. This took the form of crying, whimpering, shrieking, appealing to adults, or verbal protests. The younger children, however, did not handle the situation so realistically or so effectively as did the older ones. Jersild and Fite (1939) have reported that three-year-olds are the most quarrelsome of the preschool group. As children grow older, improved social adjustments result in a decrease in quarreling.

Sex differences in quarreling have been reported. According to Green (1933*a*), boys quarrel more than girls, start more quarrels, and retaliate more than girls do. They, likewise, use more physical force, while girls use more verbal arguments. Boys, Muste and Sharpe (1947) found, are more aggressive than girls, especially when paired with boys. Girls, likewise, are more aggressive when paired with boys than when paired with other girls.

The largest number of aggressions for both boys and girls who were observed by Muste and Sharpe was related to materials. Boys tended to grab materials more frequently than they demanded them, while girls tended to demand more frequently than to grab. Girls also tended to use all types of verbal techniques in a higher proportion of their aggressions than did boys.

When the child's reponse to aggression was observed, Muste and Sharpe noted that boys tended to be dynamic and outgoing. Counter-aggression was their most frequent response and active resistance the next most frequent. For girls, active resistance proved to be the most frequent response, with verbal resistance the next most frequent. Girls, on the whole, were more submissive or passive in their responses, while boys were more active. A comparison of the techniques of aggression used by boys and girls is given in Table XXXVIII.

TABLE XXXVIII. COMPARISON OF THE TECHNIQUES OF AGGRESSION USED BY BOYS AND GIRLS

Techniques of aggression	Boys, per cent	Girls, per cent
Verbal threat	3.3	4.0
Threatening gesture	0.7	1.4
Grabs materials	31.8	27.0
Demands materials	24.3	29.7
Physical attack	29.7	24.3
Calls another names	4.0	10.8
Verbal demands of behavior	1.4	2.7
Invading child's play space	4.7	

Source: MUSTE, M. J., and SHARPE, D. F. Some influential factors in the determination of aggressive behavior in preschool children. *Child Develpm.*, 1947, **18**, 23. Used by permission.

Boys, it may be seen from the data presented above, grab materials more frequently than they demand them, while girls demand more frequently than they grab. Girls tend to use all types of verbal techniques more often than do boys.

The median duration of quarrels in the preschool years is 30 seconds, and there is approximately one quarrel every 5 minutes, Green (1933*a*) found. The outcome of preschool children's quarrels, Dawe (1934) reported, occurs in the following frequencies:

Outcome	Percentage
Child yields to force	47.0
Child yields voluntarily	10.0
Compromise	5.5
Child interferes	2.0
Teacher interferes	35.5

As may be seen from the above distribution, the majority of preschool children settle their own quarrels by one child's yielding to the force of another child. Most often, the younger child is forced to yield to an older child.

Quarrels of young children are transitory in character and are rarely accompanied by severe or prolonged aftereffects (Jersild and Markey, 1945). Dawe (1934) has reported that, after quarreling, children are cheerful far more often than they are resentful.

The attitude of nursery-school children toward aggression was studied by Fite (1940), who questioned children regarding their attitudes. She found that the children's attitudes were direct representations of parental attitudes and of the rules imposed by parents at home. But there was no consistent relationship between what the child had to say about the "rights" and "wrongs" of aggressive behavior and the degree of aggression shown by them toward other children. After a year or two in nursery school, they established warm friendships with other children. Their attitudes were then influenced by their friends, even when these came into conflict with parental attitudes.

Bailey (1946) has suggested the following techniques as successful in dealing with the aggressiveness of children of the nursery-school age:

1. Suggest some other type of play to the child, a better way out of a difficulty, or some other means of getting what he wants.
2. Get the child to settle the conflict verbally.
3. Remove the aggressor from the scene of action.
4. Point out to the aggressor that he is hurting the other child.
5. Point out the consequences of aggressive actions and the fact that they are deserving of retaliation.
6. Initiate few "don'ts."
7. Have children make restitution.
8. Help the children and cooperate with them.

Teasing and Bullying. Teasing and bullying are aggressive forms of behavior closely related to quarreling. Teasing consists of a mental attack on another in an attempt to "get his goat" and thus arouse an angry response on the part of the individual attacked. This may consist of calling others nicknames that arouse their anger or putting emphasis on their physical or mental weaknesses. In bullying, on the other hand, the attacker attempts to inflict physical pain on others because of the pleasure he derives from watching their discomfort and their attempts to retaliate. Typical forms of bullying consist of pulling hair or clothes of others, pinching, poking, pushing, sticking pins into others, or putting thumbtacks on chairs just as others are ready to sit down.

Older or larger children more often engage in these aggressive forms of behavior than do small or physically weak children. The younger children in the home or in the school class are generally made the "butts" of the older children. Not all children, however, engage in these forms of aggressiveness. Boys tease and bully more, on the average, than do girls, and children who show feelings of inferiority or insecurity engage more in these activities than do the socially better adjusted children. Within a family, the older children are more apt to tease and bully than are the younger ones.

Cooperation. The young child, at two or three years of age, is self-centered and quarrelsome. It is therefore difficult to get him to play in a cooperative manner with other children. Should his activity be with adults, it is the adult who does the major part of giving, while the child takes what he wants with little attempt to reciprocate. Most of the play with other children is parallel play, with only occasional interchanges. By the end of the third or fourth year, there is an increase in cooperative play and group activities are longer in duration. The more opportunity the little child has to be with other children, the sooner he will learn to cooperate with them.

How great an influence friendship will have on the preschool child's cooperation has been analyzed by Wright (1943). Eighteen pairs of strong and 21 pairs of weak friends were subjected to a highly frustrating situation, in which they could see the toys they want but could not play with them. Cooperative behavior was significantly increased under the influence of frustration. The stronger the friendship, the more cooperative the behavior was found to be.

Ascendant Behavior. Ascendant behavior, the tendency to dominate others, or "bossiness," is nearly universal among young children. Mummery (1947) has defined ascendant behavior as "any kind of behavior by which an individual attains or maintains mastery of a social situation or attempts to attain or maintain mastery so that he is in control and can carry out his purposes."

Among nursery-school children, Mummery observed, ascendant behavior manifests itself in attempts to secure the materials they want from their companions; attempts to direct or influence the behavior of their companions; attempts to defend themselves, their possessions, and activities; and attempts to resist mastery.

Attempts to dominate others, Anderson (1937) found, are characteristic of the behavior of an insecure person. Among preschool children, he found girls to be significantly more dominating than boys in play situations. In the kindergarten groups, however, the reverse was true (1939). Boys were more dominating than girls. When children were paired with those of the opposite sex, the girls proved to be bossier than the boys.

To see whether children who were assertive toward their schoolmates had derived this pattern of behavior from their home environments, Meyer (1947) studied a group of nursery-school children of both sexes. She found that the children displayed assertiveness most frequently if in their home environments there were friction over disciplinary policies, many restrictions on their behavior, general home discord, and many coercive suggestions from the parents.

Furthermore, if the parent's attitude toward the child is one of dissatisfaction with the way in which the child meets his requirements, if there is little rapport between parent and child, and if the parent shows little understanding and is unready to give the desired explanations to natural questions from the child, assertiveness toward others is likely to be shown.

Sympathy. Sympathy is a form of social behavior in which a child is affected by the emotional states that another individual, whether it be adult or child, experiences. An extensive study of sympathetic behavior in nursery-school children made by Murphy (1937) has revealed some important facts about this form of social behavior in young children. Children of two and three years of age, she found, did not as a rule respond sympathetically to black and blue wounds, swellings, lumps, and minor flesh distortions which might, to an adult, suggest discomfort or illness, Red Ridinghood being eaten up by the wolf, pictures of accidents, funerals, being crippled, or carrying crutches. The three-year-olds generally, though not universally, responded to people whose distress involved bandages, blindness, injuries colored with mercurochrome or iodine, red swellings, scars or scratches; to deprivation of toys, food, or mother; to physical dilemma, such as being caught in a play pen or bicycle; to an interference with activity of child having to stay in bed; to frustration in activity; to attack by another child; to incompetence to do a job undertaken; to an accident, such as a fall; or to crying.

Sympathetic responses on the part of young children, Murphy noted, consisted of helping others; removing or attempting to remove the cause of distress; comforting others by pets, pats, hugs, and kisses; punishing the cause of distress; protecting and defending the person in distress; warning, or telling an adult or other child about an individual in distress; asking questions to find the cause of distress; and suggesting or effecting solutions. Occasionally unsympathetic responses were observed, and these consisted of laughing at the person in distress, using the situation to play his own role, usually a dominating one, attacking a child in distress, or merely staring instead of sympathizing.

Marked individual differences in sympathetic behavior appear. It increases with both mental age and chronological age. At two or three years of age, no sex differences occur, though at later ages girls are generally more sympathetic than boys. That sympathy in young children is dependent to a large extent upon the child's ability to comprehend the situation was demonstrated by Murphy in framed situations or informal experiments, designed to test the child's sympathetic responses. The child's response was influenced to a large extent by the meaning of the situation to him, in relation to his previous experience.

Social Approval. Even a young baby likes to be noticed and to hold the center of attention. From the fourth or fifth month, consciousness of self reaches a point in the development of the child where it requires an outlet. Long before the baby can talk, he "senses" that he is the center of admiration and attention. He enjoys being noticed by others and is unhappy when no one pays attention to him. The more accustomed he is to attention, the more difficult it will be for him later, when he discovers that those outside of the home do not give him the attention he received at home. This is generally true of first-born or only children. To compensate for lack of attention, they learn, by trial and error, new tricks that will restore them to the center of the stage and the limelight which they learned to enjoy at home.

With each succeeding year, the child becomes increasingly anxious to win the approval of others, first that of adults and later that of individuals of his own age. He uses whatever means he finds successful to put himself in the limelight, and he derives keen enjoyment from the recognition he receives. The desire to impress his companions, as well as the adults of his environment, often brings the child into conflict with adult regulations and the codes of the social group. Absence of social approval, not only causes the child to be unhappy but often drives him to behave in a socially unacceptable way which, he has discovered from experience, invariably brings forth the attention of others, even though it is usually not accompanied by their approval.

Summary. From the survey of social behavior in young children presented above, it is apparent that most of the important types of social behavior necessary to adjustment to others begin to develop at this time. Even though they are not well enough developed to enable the child to get along successfully with others at all times, there is nevertheless an important beginning, which will serve as the foundation for further development during the so-called "gang age."

The number of contacts the child has with other children is an important factor in determining how far this development will progress at this early age. Jersild and Fite (1939) noted that kindergarten children who had previous nursery-school experience entered into a decidedly larger number of social contacts than those who had never before attended nursery schools. By the spring term, however, the "new" children had made marked progress in developing social behavior, shown by the fact that they made as many social contacts as the children who had attended nursery school during the preceding year.

SOCIAL BEHAVIOR IN LATE CHILDHOOD

After the child has entered school and has come into contact with other children, he loses interest in playing around the house, alone, or with one or two companions. He likewise now considers it a bore and not a treat to accompany his parents on picnics, parties, or family gatherings. At the same time, interest in individual games gives way to group games, and play without companions loses its charm. The child has entered what is often called the "gang age," an age when social consciousness develops very rapidly.

The child's group is the result of a spontaneous effort on the part of the child to create a society adequate to meet the needs. It is a substitute for what adult society fails to give and, at the same time, it offers relief from adult supervision. Through group influences, the child receives important training in social behavior that could not be obtained with comparable success under conditions imposed by adult society. There is an awakening of social consciousness at this time which is fundamental to all social behavior.

Studies of the social behavior of late childhood by Block (1910), Furfey (1926), Hartson (1911), Puffer (1905), Thrasher (1927), and others have revealed important facts about the group and its influence upon the social development of the individual during late childhood. This period extends from approximately the sixth or seventh year to preadolescence, around the twelfth year, and reaches its peak a year or two before adolescent changes begin to appear. During this time, boys and girls find increasing pleasure in being with small groups of their own sex. They find being

alone unpleasant and, if restrained from contact with the "gang," "set," or "crowd," for even a day, the child becomes fretful, restless, and unhappy. The group dominates the child's life. It sets the styles in clothing, the types of play activities engaged in, and the ideals of right and wrong conduct.

Sex Differences. Group behavior is more pronounced in boys than in girls. This may be due to several causes. Girl's behavior is more carefully scrutinized than boys', and girls are not permitted the freedom in their play that their brothers have. Many girls are given household tasks after school hours, and this keeps them away from their playmates. Many parents keep the girls in the home for no reason other than that they believe it to be the proper place for girls. Finally, most of the favorite types of play engaged in by boys require a larger number of players than is needed for girls' play, and this motivates boys to collect a crowd.

Group Characteristics. The main characteristics of group life consist of an interest in team games and sports of all kinds, as contrasted with individual play; an eagerness to join a group and a pride in being looked upon as one of its members; a group consciousness, which results in loyalty to the group and a certain feeling of superiority over all who are not members of the group; an unwillingness to play with members of the opposite sex; and, finally, pronounced secrecy surrounding all of the group activities.

Groups are sometimes organized and sponsored by adults, as is true of the Boy Scouts, Wolf Cubs, Girl Scouts, Camp Fire Girls, and similar organizations. They may also be formed by the children themselves as a result of contacts in school or in the neighborhood. At first, the groups are generally small in number, but they gradually increase in size as interest in team games and sports necessitates a larger number of players. The average size of these groups ranges from six to eight members, always headed by some leader.

Meeting Place of Groups. The meeting place of the group differs according to the community. In the case of boys, it may be a street corner, garage, barn, shed, space in a cellar, vacant lot, deserted house, school playground, or the corner drugstore. Girls, whose activities are generally more closely supervised than are those of their brothers, usually meet at the home of one of the members of the "crowd," at the school playground, or at the corner drug or candy store. Whatever meeting place may be selected, it is always one where there will be a minimum of adult interference and supervision, so that the activities of the group may be carried out more or less secretly, and where, at the same time, there will be opportunities for the sort of activities favored by the group.

The group's rendezvous is usually furnished and decorated by its members and symbolizes the predominant interests of the group as a whole. The furnishings generally consist of old, dilapidated pieces of furniture, brought together by the different members. Boxes with locks, for which each member has a key, are used as the safety places for the group's treasures. Perhaps a victrola, a radio, or even an old piano will be among the other articles of furniture. The walls of the rendezvous are usually decorated with pictures of heroes or heroines—ballplayers, prize

FIG. 56. Gang play. (*From F. J. Brown, The sociology of childhood. Prentice-Hall*, 1939. *Used by permission.*)

fighters, movie stars, or others whom the group members admire, even though they do not know them. Posters used for commercial advertising or pictures cut from magazines are also used. The walls, as a rule, are covered with pictures, with no attempt at artistic arrangement.

Group Activities. The activities of the group are numerous and vary with the community. The most important ones include play of all types, such as sports, card games, going to the movies or theater; mechanical and constructive activities, such as making their own rendezvous; social activities in the form of hikes, picnics, parties, and dramatic productions; reading; annoying other people, especially members of the other groups, members of the opposite sex, and old people; fighting, stealing, gambling, drinking, and smoking, which are forbidden activities at this age; or exploring, which sometimes leads to wandering off for several days or which may be satisfied by camping trips under the supervision of an adult (see Fig. 56).

Group activities often border on rowdyism. Boys are apt to be noisy, happy-go-lucky, careless, trick-playing. In many of the boys' groups, the activities are characterized by a mob spirit, which leads the individual members of the group to do things they have learned are forbidden and which they would never consider doing alone. The tendency toward hoodlumism, vandalism, or general annoyance to the community originates within the group and each member feels obligated, because of loyalty to the group, to do what the group does, no matter whether he knows it to be right or wrong. The excitement and reassurance that come from doing what others do tend to break down even the most rigidly established codes of behavior.

Forms of Social Behavior. There are several forms of social behavior which are developed as a result of group life, one of the most important of which is *susceptibility to social approval* and *disapproval.* As soon as the child begins to crave the companionship of others, he begins to crave their approval; at the same time, he tries to avoid their disapproval. In dress, speech, and behavior, he strives to win the approval of those with whom he plays. Should a conflict arise between the standards of the home and those of his playmates, the child will invariably side with the latter, because, at this age, their approval means more to him than does that of adults.

Praise and Reproof. Experimental studies of the influence of social approval and disapproval, in the form of praise and reproof, have shown how susceptible boys and girls of this age are to them. Kirby (1913) found that school children made median gains of 48 per cent in addition and 79 per cent in division when they were encouraged to improve their previous scores. A comparison of the relative values of play, games, praise, and reproof as incentives in an ordinary school situation was studied by Warden and Cohen (1931) who found that praise and reproof were the best incentives to use to improve the accuracy of the work done.

Using group intelligence tests, Hurlock (1924) equated three groups of elementary-school children on the basis of age, sex, and intelligence-quotient scores. She then praised one group by saying: "I have selected you from the whole group who took the tests last week because of the very excellent work you did in that test. You not only made the best marks in your grade, but you did better than most boys (or girls) in grade (mentioning a grade several years higher) do in this test. Today, I am going to give you a test like the one you had last week. I want you to try not only to break your own records, but also to make the group stand first in the school and set a standard for the others who did not do so well." The second group was reproved in a similar fashion, while the third group was ignored. Praise and reproof were found to be of equal

value, and they were capable of raising the average I.Q. scores for the group by 7 points. Less than 1 point increase resulted from practice alone. The older children responded to these incentives more than the younger ones, though praise was more effective for the younger and reproof for the older.

Suggestibility. Perhaps at no other age in life is the normal individual as suggestible to those about him as he is during this period. The desire to be an accepted member of the group leads the child to comply with the wishes of the group as a whole and accept without question whatever form of activity the leader may suggest. Blatz and Bott (1927), in their investigation of the misdemeanors of 1,437 school children, found that the peak of misdemeanors came, on the average, between the ages of seven and eight years. This they interpreted as being due partly to the fact that at this age the child passes from the stage of individual play to that of group play, which results in a feeling of loyalty to the group. This loyalty, in turn, renders the child highly suggestible to the leader of the group.

Contrasuggestibility. While accepting in a more or less unquestioning manner the suggestions of the group, the child begins to revolt against adults and to act in direct contradiction to them. This contrasuggestibility, which leads to many misdemeanors, is usually strongest in those whose suggestibility to the group is very pronounced. In the presence of adults, they rebel against suggestions which, had they come from their own playmates, they would doubtless have accepted without hesitation. They stubbornly do what they are warned not to do, as stepping in deep snow when told not to, or leaving their umbrellas at home when their mother tells them to be sure to take them to school.

Rivalry and Competition. Interest in the social incentives of rivalry and competition becomes very pronounced at this time, as is readily apparent in the interest shown in games and sports. Competition with other individuals, or rivalry between groups, are equally stimulating to the child and may be used as incentives in situations where the activity in and of itself may not prove to be interesting, as is sometimes true in the case of schoolwork. A number of experimental studies by Hurlock (1927), Maller (1929), and others have been carried out to measure the incentive value of rivalry and competition at this age. These studies have shown that regardless of the activity involved, competition proves to be a powerful incentive. In some cases, group rivalry, which involves cooperation within the group, is more powerful than individual rivalry, while in other instances, the opposite is true.

Sympathy. Sympathy in its true form, involving an understanding of the situation, appears for the first time during these years. However,

it is only in its crudest form and lacks the fine sensitivity to situations which appears later. This makes the behavior of the child seem to be somewhat "hard-boiled" or "tough." Bullying and teasing younger children, animals, and servants are quite common at this age. Often jealous rivalry exists between the play groups of boys and girls, and teasing of the girls by the boys is very common.

In a study of altruism among third-grade children, Wright (1942) placed the children in settings in which the child was confronted with a desirable and a less desirable toy. He was asked to give one away and to keep the other for himself. In another experiment, he was to distribute toys between a stranger and a friend. The children, Wright found, were more generous to strangers than to their friends. This trend was also seen when they were asked to distribute two toys differing in attractiveness between a friend and a stranger. Sixty-eight per cent of the children favored the stranger. When they were asked why they favored the unknown child, the most common reasons given were that (1) they wished to eliminate an inequality between the stranger and their friend, (2) they would like to gain a friend, and (3) it is a social grace to favor a friend.

Reasons given for favoring a friend were that friends are "closer to them," a relationship of reciprocity exists, and they wanted to decrease the social distance between themselves and their friends.

An increase in self-centeredness is accompanied by an increase in altruism or a "regard for, and devotion to, the interests of others." To determine when and to what extent altruism develops in children, Turner (1948) constructed an Altruism Scale of items relating to 30 common situations in which children find themselves at one time or another. These related to such situations as competition with others or self, personal threat, and conversations. When the test was given to a group of boys, Turner found that boys may not become more altruistic as, or simply because, they grow older. Forces within the home, school, or other community agencies did not prove to be effective in fostering its development. No stable trait of altruism exists in young children, he claimed, and there was no evidence of a general increase in altruism from nine to sixteen years of age.

Good Sportsmanship. Good sportsmanship, or ability to cooperate with the group to the extent of submerging individual personalities into the group patterns, is an outgrowth of group life. The child soon learns that he must "play the rules of the game," and any infringement upon these, such as cheating, tattling, lying, or the use of underhanded methods, will not be tolerated.

Bos (1937) in a study of cooperation requiring an exchange of ideas in

picture-matching tasks, noted that the intimacy of children's ages, friends, or playmates did not affect the quality of their work. A too lively personal interest in each other, however, proved to be a stumbling block in the way of doing fruitful work together.

Snobbishness. Social discrimination, or snobbishness, is an unsocial form of behavior which makes its appearance during late childhood. Members of a play group soon develop the attitude that any member of the group is all right, while anyone who is not a member of the group is inferior to them. This sort of snobbishness, based on whether one belongs or does not belong to the group, is the starting point for adolescent snobbishness, which is based on wealth, social status, and similar criteria characteristic of adult snobbishness.

Antagonism to Opposite Sex. Throughout the entire elementary-school period, there is a marked antagonism between children of the two sexes. This is more pronounced on the part of boys than on the part of girls. There is a tendency for boys to regard girls as their inferiors. Naturally, girls resent this and, in spite, try to get even with the boys by scorning them and by taking every possible opportunity to say unpleasant things about them.

This attitude of boys toward girls and of girls toward boys is well illustrated in children's ratings of their associates. When fourth-, fifth-, and sixth-grade boys and girls were asked to rate one another on personality traits, Tschechtelin (1944) found that the boys rated boys higher than they rated girls. Girls, in turn, rated girls higher than they rated boys.

Evaluation of Group Life. Group life favors the development of both good and bad qualities in the child. From the point of view of good qualities, it is socializing experience which changes the child from an individual into a member of the social whole by teaching him to be democratic, to fit his desires and actions into those of the group, to cooperate with the group, and to eliminate selfishness and individualism. At the same time, it develops courage, self-control, fair play, justice, forbearance, loyalty, fidelity, devotion to a cause, obedience to a leader, and many similar character traits which will prove to be necessary to success in adult life.

On the other hand, there are many bad qualities developed as a result of group activity, such as the use of slang and swearing; the telling of salacious stories and jokes; drinking; disorderly conduct; truancy; an attitude of contempt for laws and lawmakers; the breaking of home ties and shifting of interest from home to group activities; and the breaking down of ideals established in the home after years of teaching. In reality, many adult criminals among both men and women started their criminal career when they were members of groups or crowds during their childhood years.

Dimock and Hendry (1929) asked 73 boys who had been to summer camps to tell what are the "biggest things a boy gets out of camp life." The reports given, as presented below, show that the socialization that comes with even as short a contact with others as the boys experienced at camp stood out in their minds as paramount.

TABLE XXXIX. QUALITIES DEVELOPED THROUGH CAMP LIFE

Qualities	Number of Boys out of 73 Mentioning
Skill in such activities as swimming, canoeing, campcraft	39
Learning to get along with others, "mixing," working together	35
Better health, physical fitness, strength, posture	33
Attitude of helping the other fellow, unselfishness	32
Self-confidence, reliance, initiative, thinking for self	20
Development of courage and nerve, losing timidity	17
Appreciation of nature, out-of-doors, and music	17
Meeting and making friends, fellowship	16

Source: DIMOCK, H. S., and HENDRY, C. E. *Camping and character.* New York: Association Press, 1929, p. 18. Used by permission.

THE NEGATIVE PHASE

Just before the onset of puberty, from eleven to thirteen years in girls and from thirteen to fifteen years in boys, the child passes through a stage of development characterized by antisocial behavior. Because there is an abrupt reversal of the individual's behavior and a decided backward trend in social adjustments, the name given to this period by Charlotte Bühler (1926–1928) of Vienna, the *negative phase,* aptly describes it. Fortunately, it is of short duration, lasting for two to six months in girls and slightly longer in boys. It generally ends with first menstruation in girls, and with boys, at the time when secondary sex characteristics begin to appear.

Spirit of Antagonism. Typically, the boy or girl at this age carries a chip on his shoulder. He is apt to misinterpret what others say or do and to feel that those who were formerly his friends are now his enemies. Both at home and in school, the spirit of antagonism is displayed in a critical attitude toward home, parents, and society in general. The preadolescent seems to resent the happy, carefree spirit of others, just as he resents it if he is urged to take part in the activities of his schoolmates. No matter what is done for him, it is not right, and his attitude toward all with whom he comes in contact is apt to be suspicious, unfriendly, and critical.

The desire to withdraw from his former friends and playmates is a natural accompaniment of the socially antagonistic attitude. The preadolescent wants to escape from those who, he feels, are responsible for making him unhappy. It is not at all an uncommon thing for boys and

girls at this age to break away from their former play companions and to spend their leisure time alone. Many childhood friendships of long standing are broken at this age because of the misunderstandings and hurt feelings which result from the preadolescent's withdrawal from his old play groups or from criticism of his former friends for being rowdy, childish, or silly.

Desire for Isolation. The preadolescent, who shows distinct preference for being alone rather than being with his friends, generally spends his time in reading, daydreaming, or moping. It is during this time that he has an opportunity to think about matters, and he very often comes to the conclusion that he has been badly treated, that no one loves him, and that life is not worth living.

The desire for isolation is, for the most part, the result of the physical condition characteristic of this age. It is a natural outgrowth of the decreased physical energy which accompanies sexual maturing. Because he cannot keep up with the strenuous activities of his former playmates, and because he becomes so fatigued that these activities lose their enjoyment, the preadolescent develops new interests to occupy his leisure time. He secretly envies the pleasures of others but withdraws from the situation in which he feels he is an outcast.

Experimental Investigations. Charlotte Bühler (1926), in a study of 50 girls in a "shelter" in Vienna, found that during a period of two to nine months before menstruation occurred, all of the girls she studied passed through a phase of restlessness and uneasiness. There was a tendency for the girls to isolate themselves from the others. This phase ended abruptly, following the onset of menstruation, after which ordinary social relationships were resumed.

In a study similar to that of Bühler, Hurlock and Sender (1930) obtained information from 160 junior-high-school teachers about the negative phase and its characteristic behavior. As a supplement to this, they examined the court records of 142 sex-delinquency cases. The results of this study showed that the typical negative-phase behavior, such as desire for isolation, loss of interest in school and friends, restlessness, and withdrawal from companions, was more common in girls from poor homes than in girls from better homes. There was a larger percentage of sex-delinquency cases from the twelve- and thirteen-year groups than from the fifteen-year group.

Blatz and Bott (1927), in a study of the frequency of misdemeanors, such as lack of application, disobedience, or disorder, found the peak for boys at the eight- to nine-year level. In the case of girls, the ten- to eleven-year and the thirteen-to fourteen-year ages were marked by the greatest number of misdemeanors. The peaks at the thirteen- to four-

teen year level, they contended, may be considered the result of preadolescent nonsocial behavior.

Play Interests. The effect of the onset of puberty on the play interests of boys and girls has been studied by a number of investigators. Lehman (1927) noted a marked relationship between the onset of puberty and the decline of interest in playing with dolls on the part of a group of girls ranging in age from 8½ to 18½ years. After the age of 9½ years,

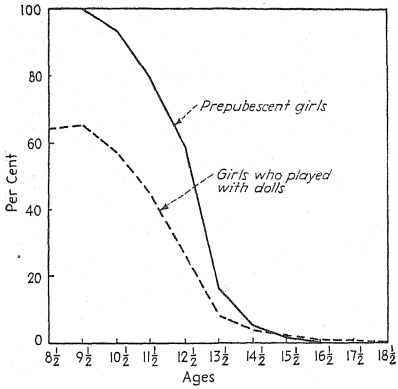

FIG. 57. Percentages of pubescent girls vs. percentages of girls who played with "dolls, doll clothes, doll carriages, etc.," during the course of one week. (*From H. C. Lehman, A study of doll play in relation to the onset of pubescence. J. genet. Psychol.*, 1927, **34**. *Used by permission.*)

there was a rapid falling off in the number of girls of each age group who played with dolls, with the peak coming between 11½ and 13½ years. This decline in interest in doll play is illustrated by the curves in Fig. 57. There is also a waning of interest in such juvenile play activities as cutting paper things with scissors, running and romping, playing school, playing house, running races, hide-and-seek, jumping or skipping rope, tag games, dressing up in adults' clothing, or playing jacks (Lehman and Witty, 1930).

In the case of boys, Lehman and Witty (1930) found that puberty is accompanied by loss of interest in running and romping; climbing porches, trees, or fences; playing cowboy; coasting on a wagon; hide-and-seek; tag games; playing Indian; pillow fights; and police and robbers. Furfey

(1926) studied two groups in clubs, a troop of Boy Scouts and a pack of Wolf Cubs. He found that below the age of eight very few boys were interested in joining the clubs, and after fourteen, there was a marked falling off in club membership, caused by loss of interest in play of this sort. With the onset of puberty, group play gives way to organized athletics and more advanced forms of play.

Causes of Negative-phase Behavior. The characteristic negative-phase behavior, whether it appear in a pronounced or in a mild form so that it can scarcely be recognized as such, comes from two causes: poor health and poor environment. The preadolescent physical changes are great enough so that temporarily the general health of the individual is below par. Like anyone who is not in the best of health, the preadolescent behaves in an unsocial way. Poor home conditions, lack of understanding of the situation on the part of parents, inadequate knowledge on the part of the preadolescent of the changes taking place, insufficient food of the right kind, and too many duties outside the school, all tend to exaggerate this condition, making it more pronounced than it normally would be. The poor environmental factors generally affect boys and girls of poor economic status more than they do those of better economic conditions, but this is not necessarily the case.

CHOICE OF COMPANIONS

In Babyhood. Even before the baby is a year old, he shows stronger attachments for one person than for another. The attachments are for the person or persons who take care of the baby and thus further his needs and desires. Adults, during the first year or two of a baby's life, prove to be the most desirable companions because they satisfy his desire for playmates while at the same time satisfying his needs. In addition to that, they play with him when a child of his own age or slightly older engages in play with his own toys.

In Early Childhood. In the preschool days, the child's companions are usually adults of the family, brothers and sisters, or a few children from the immediate neighborhood. The social environment is that of his home or immediate neighborhood. When he enters school, however, his group of companions widens, and he has an opportunity to select playmates from a larger group than was possible during the preschool days. It is at this time that a real interest in playing with other children shows itself.

In the choice of companions, the older child differs greatly from the baby who willingly accepts as his companions anyone regardless of age or sex who will do things for him. The child becomes more selective in choosing his friends. Such factors as age, intelligence, and good sports-

manship become very important, though the sex of the child is of less importance in determining whether or not he will be chosen as a playmate than it is later.

To the child, a satisfactory companion is one who can do things with him, preferably another child of the same or slightly older age. Adults no longer rank in first favor as companions because they are unable or unwilling to play as the child wishes to play. So long as girls play as boys do, sex distinctions do not enter into social activities at this age, and the social group is composed of members of both sexes. Likewise, the child attaches little significance to difference in nationality, religion, or social and economic status, if the children themselves prove to be satisfactory companions.

Because of the limited environment of the typical child, companions are almost always selected from the immediate neighborhood. This means that the child must choose from the neighborhood children those boys and girls whom he finds to be the most satisfactory companions for him. Should none prove to be of his liking, one of two courses of action is open: either he must modify his behavior to fit into that of the children available as companions, or he may develop "imaginary companions" who will play with him as he wishes.

In a study of friendships among preschool children, Parten (1933) found that the intelligent quotient had little influence on children's friendships as compared with age and home environment. Hagman's (1933) study revealed that the four-year-olds showed a decided preference for companions of their own sex, while the two-year-olds indicated no such preference. Koch (1933) likewise reported that at the age of four years there was a clear-cut tendency for boys to favor boys and for girls to favor girls.

In a later study, Koch (1944) showed white and Negro nursery-school children paired photographs and asked them to point out which child of the pair they would choose for a playmate. The sex factor proved to be of greater significance in the choice, with race second. The younger children selected more often children of their own sex, while the kindergarten children selected opposite-sex playmates slightly more often. There was a decided tendency for the older white children to choose colored playmates less frequently than did the younger children.

Challman's (1932) study of friendships among nursery-school children revealed that boys have a slight tendency to form stronger friendships with other boys as they grow older. This tendency was not found in the boys' friendships with girls or in the girls' friendships with each other. A marked tendency existed for children of each sex to form friendships within their own sex.

Chevaleva-Janovskaja (1927) reported the results of teachers' observations of more than 2,000 spontaneous groups formed by Russian children ranging in age from three to eight years. Of these groups, more than 67 per cent were composed of children of the same sex. The tendency to form unisexual groups was found to increase with age, with children aged three to five years forming bisexual groups more often than did the older children.

Imaginary Playmates. The young child who has, for one reason or another, no real playmates often imagines that he is playing with another child. These imaginary companions are lifelike to the child, possessing names, physical characteristics, and abilities to do things which one normally associates with real children. The child derives keen pleasure from playing with his imaginary playmates, and this fills a gap in his social development.

Bender (1944) maintains that many children, "when parental relationships are inadequate or depriving, use imaginary companions to supplement the emotional satisfactions of the environment." Among gifted children, she observed, where their needs are greater, there is a tendency to have imaginary companions even when the home environment seems normal.

Of the 210 children studied by Ames and Learned (1946) at the Yale Clinic of Child Development, 21 per cent had imaginary companions. They commented that there was not one type of personality that predisposed children to have imaginary companions. They found the adoption of imaginary companions prevailed not only among timid or lonely children or those exhibiting personality difficulties. Rather, their study suggested that imaginary companions occur as a natural developmental phenomenon in many children. It is characteristic of the age period from 2½ to 4½ years, and probably persists secretly considerably past that age.

From the long-range point of view, however, the imaginary playmate is far from an ideal solution to the problem of the only or the lonely child. Having become accustomed to playing with an imaginary playmate who is docile and cooperative, the child develops the habit of domination, which, he discovers when he begins to play with real children, cannot be used with such ease and success. When he finds that he cannot dominate the situation in which real children are involved, he becomes a maladjusted member of the group. This necessitates a complete change of attitude and behavior on his part and, if this fails to occur, the child will revert to the imaginary playmate, because it is easier and pleasanter to play with him.

Imaginary companions, Bender and Vogel (1941) maintain, have a

positive and constructive value in the personality development of the child. They represent an effort on the child's part to compensate for some lack or deficiency in his experiences or in his relationship with the world. An unsatisfactory parent-child relationship or unsatisfactory experiences from the world of reality due to unfavorable social or economic situations contribute to the creation of imaginary companions. This, Bender and Vogel maintain, is a positive and healthful mechanism used during a time of need, but is immediately given up when the need no longer exists.

Several scientific studies of the characteristics of imaginary companions have been made by Hurlock and Burstein (1932); Jersild, Markey, and Jersild (1933); Svendsen (1934); Terman (1925); and others. They have revealed important facts regarding the child's attitude toward his imaginary playmate. Girls more often have imaginary playmates than do boys, and to girls the playmates are more realistic than they are to boys. Imaginary playmates are more prevalent among children of superior intelligence than those of average intelligence and among only children or among siblings where there is a large age difference. Terman (1925), in his study of children with very high intelligence-quotient scores, noted that a large proportion of these children had imaginary playmates at one time or another. The usual age for the imaginary playmate to appear is around the third year, and the age for disappearance, when the child enters school and thus has real playmates.

Imaginary companions in most instances are little boys or girls and only rarely take the form of an adult, a fairy, or an animal. Sometimes they are of the child's own sex and sometimes of the opposite sex. They always have a name. The name may be a commonplace one, or it may be an unusual one, taken from real people, from stories, or created by the child himself. The child plays with his imaginary playmate as if he were a real individual. He even talks to his playmate and in many instances, the child takes his playmate with him wherever he goes. No matter what the activity may be, the real child is the boss, and the imaginary playmate is a submissive follower.

When Jersild *et al.* (1933) asked children five to twelve years of age about their imagined playmates, only about one-third of the children described their playmates with fairly definite and stable characteristics. Girls reported imaginary boy companions more often than boys reported girl companions, but in each case, the number was small. More often, the companions were of the same sex as the child.

In Late Childhood. When the child enters school and begins to be interested in group play, new criteria, combined with old ones, are used in the selection of his playmates. Propinquity in the school or neighbor-

hood is responsible for throwing together individuals from whom companions are selected. Unlike the adolescent or the adult, who may select his friends from a distance, the child must select his friends from the immediate neighborhood in which he lives. Within this neighborhood, he selects as companions those of the same size, sex, chronological age, mental age, social maturity, and interests. Of these factors, mental age and degree of social maturity are perhaps the most important.

Among mutual friends, Bonney (1946) noted, there is a marked similarity in academic achievement and intelligence. This means, he maintains, that the child should be placed in a school or a neighborhood which furnishes the maximum number of associates who are close to his intellectual level. Home backgrounds, likewise, are very similar in mutual friends.

Indifference or aversion to the opposite sex is characteristic of late childhood, especially among boys. This attitude reaches its peak just before puberty. Hence, it is not surprising to find that in the selection of companions the child prefers members of his own sex. It is only an occasional group that accepts in its membership an individual of the opposite sex. If a girl is a member of a boys' group, she is a "tomboy" and plays the role of a boy. The boy who is willing to be a member of a girls' crowd is generally a "sissy" who will not be accepted in a boys' group.

Economic differences and social position are unimportant in the selection of friends at this age. Unless home pressure is applied, the child does not discriminate against those of different races, religions, or colors. If their behavior is acceptable, their race, religion, or social position is unimportant. The child does, however, discriminate against those of another school, neighborhood, or group, not because they are inferior to him in any way but because they belong to a different group.

Dull and very bright children rarely become members of play groups and, as a result, spend most of their time in solitary play or in play with only a limited number of companions of their own intellectual level. The dull child cannot keep up with the group activities and is therefore not a welcome member of the group. The very bright child, on the other hand, is apt to become bored with the activities of the group and consequently shows no desire to take part in the activities of others.

Pintner, Forlano, and Freedman (1937), in a study of fifth- and eighth-grade children, found chronological age and mental age more important in determining friendship than personality traits. There was no evidence to show that the children selected friends of opposite characteristics. Seagoe (1933) reported that two principles are involved in the selection of friends at this age: proximity, and similarity in mental capacity and

ability. The mean distance between the homes of friends was 0.26 mile as compared with 0.92 mile from unselected pupils. About 75 per cent of the friends were in the same grade in school. The mental ages of the friends were closer alike than the intelligence quotients, and there was a marked relationship in athletic ability, cleanliness, courtesy, and personality traits.

Almack (1922), in a study of children in grades 4 to 7, asked each child to name a boy or a girl he would choose to help him if he were given some work to do for which the person was well fitted. Each child was also asked to name the boy or the girl he would first invite to a party. Correlations between chronological ages, mental ages, and intelligence quotients were 53, 54, and 41 respectively. This led Almack to conclude that there is a tendency for children of these ages to select associates from their own mental level.

When Koch (1946) asked children from the second through the tenth grade to express their preferences in the case of every pair of classmates in their rooms, she found that white children tended to prefer their white classmates to Negroes in increasing numbers as they grew older. Second-grade Negro children showed little race preference but, if anything, favored the whites slightly. The proportion of choices made by Negroes who favored Negroes increased steadily up to the tenth grade.

In the lower grades, Koch noted, the sex and race cleavages were of about the same magnitude. In high school, where the distance between the sexes decreased, the interracial distance increased. The white boys showed a preference for their own race more in judging girls than in judging boys, while the reverse was true for the Negro boys. The white girls showed a stronger preference for white classmates, especially when judging boys.

Austin and Thompson (1948) asked sixth-grade boys and girls for their reasons in choosing their three best friends. In Table XL are given the reasons and the percentage of each. Personality characteristics, they found, were the most important factors influencing children's selections of "best friends," with propinquity and similarity of interests next most important.

When the children were asked for reasons for any changes among their three best friends after an interval of 2 weeks, Austin and Thompson found that approximately 40 per cent had made no changes. Among those who did, the reasons given in Table XLI were listed.

As was true of the selection of friends, personality traits proved to be the most important factors in the rejection of "best friends," with lack of recent contact, recent quarrel, and incompatibility the next most common causes.

TABLE XL. REASONS GIVEN FOR CHOOSING FRIENDS

Reason	Per Cent
Cheerful	12.2
Nice and friendly	11.5
Frequent association	11.3
Similarity of interests and tastes	10.9
Kind	7.9
Unclassified	5.9
Cooperative	5.7
Generous	5.7
Honest	4.6
Even-tempered	4.5
Polite	4.2
Physical appearance	4.1
Loyal	3.2
Agreeable	2.8
Modest	2.2
Intelligence	1.3
Skillful in games	1.0
Obedient	0.2
Active	0.2
Chronological age	0.2
Brave	0.1

Source: AUSTIN, M. C., and THOMPSON, G. G. Children's friendships: a study of the bases on which children select and reject their best friends. *J. educ. Psychol.*, 1948, **39**. Adapted and abbreviated from table on p. 110. Used by permission.

TABLE XLI. REASONS FOR CHANGING FRIENDS OVER A 2-WEEK INTERVAL

Reason	Per Cent
Lack of recent contact	14.5
Unclassified	14.3
A recent quarrel	10.9
Replaced by another child	9.1
Incompatibility	7.9
Everybody a friend	7.6
Conceited or bossy	7.3
Disloyal or underhanded	6.1
Bullying or quarrelsome	5.2
Dishonest or untruthful	3.9
Uncooperative	3.9
Noisy or silly	3.9
Dull and uninteresting	2.1
Unkind	1.8
Discourteous or rude	1.5
Selfish	0.9

Source: AUSTIN, M. C., and THOMPSON, G. G. Children's friendships: a study of the bases on which children select their best friends. *J. educ. Psychol.*, 1948, **39**. Adapted and abbreviated from table on p. 112. *Used by permission.*

LEADERSHIP

In any group of children, no matter how young the children may be, the relationship is seldom one of equality. One individual usually stands out as a recognized leader. Popularity and leadership are not synonymous, though they are usually found together. A leader is always popular, though a popular individual is not necessarily a leader. Many popular individuals at every age are liked because they are easygoing and readily adapt themselves to social situations, but they lack other qualities that a leader must necessarily have.

First Appearance of Leadership. Leadership ability shows itself as soon as two children are placed together. The dominant child takes the toys that appeal to him. Should the toy be in the possession of another child, he will push, pull, kick, and do everything within his power to get it. By the age of ten months, the baby is usually conscious of his triumphs, and a smile of self-satisfaction lights up his face. The baby who has been forced into a position of submission looks sorrowful, whimpers, or cries.

When Bühler (1930) placed two babies, six to ten months old, facing each other, their behavior showed active seeking of contact one with the other by touching, exchanging toys, pushing, and pulling. The older, physically stronger, and more skillful baby dominated. Shirley (1933) studied the social behavior of babies in a baby-party situation in which three or four babies, born within a week of one another, were brought together for the first time when the babies were forty-three weeks old. She found that they paid little attention to one another, except to pull at one another's toes and to reach for one another's hair. When one toy was given to two of them, more aggressive and resistant behavior occurred.

Leadership in Early Childhood. The child leader is characteristically superior to the other members of the group in size, intelligence, and generally in age. Because of his superior age and intelligence, he has more suggestions to offer for play, and thus the other children are willing to follow his lead. Sex is an unimportant factor in leadership at this age. Girls often assume the role of leadership over boys as well as over other girls. Likewise, social status, nationality, or physical attractiveness are not as important qualities now as they will be later. Fairness and social responsibility to the group, on the other hand, are important characteristics of the child leader.

At first, the child tries to dominate other children by the same technique that he used for adult domination, namely, crying, hitting, and temper outbursts. He soon discovers that this does not prove to be as effective as when used on adults, and he then modifies it. There is, how-

ever, during the early childhood years, a marked tendency for the leader to be the tyrannical boss of the group. Little consideration for others appears in the leader's behavior. He expects them to follow his wishes in an unquestioning manner and becomes angry or sullen if they rebel. Should his technique become too tyrannical, the leader finds himself displaced and another child is recognized as the new leader by the group.

Parten (1932*a*) observed two definite types of leaders at the nursery-school age: the "diplomat," who leads a large number of children by artful and indirect suggestions, and the "bully," who uses brute force to boss a small group chosen as his own gang. In an analysis of "ascendant behavior," Jack (1934) recognized two types: pursuing one's own purpose against interference and directing the behavior of one's companions. To measure ascendant behavior, Jack placed three groups of toys, sand toys, celluloid farm animals, and a car and truck, in three corners of a sand box. Preschool children were allowed to play with these materials, and their behavior during the play was carefully observed. Ascendant behavior, she noted, was accompanied by social responsiveness, a tendency to resist adult control, and expressions of a rivalrous, competitive attitude. In attempts to control the behavior of others, the children used bargains, reproof, and threats. Self-confidence seemed to underlie all manifestations of ascendance.

Leadership in Late Childhood. During late childhood, the leader represents the group's ideal. He must be a good athlete and an all-round good sport. As boys of this age are subject to hero worship, it is natural for them to follow the person who possesses the traits they most admire. Should the leader fall short of the group's expectations, and should he display traits which they dislike, he soon loses prestige and is replaced as leader by another who, at the moment, more closely approximates the group's standards.

The characteristics of the child leader have been extensively studied in experimental investigations. Expressed in the boys' own words, Puffer (1905) listed the following leadership qualities: 14 said that the leader was the oldest; 13, that he was the largest; 13, best player; 10, best fighter; 6, wanted to lead; 6, was good-natured or generous; 5, smartest; 4, started games; 3, best stealer; 2, highest grade in school; 2, had most money.

Caldwell and Wellman (1926) studied boy and girl leaders from the seventh, eighth, and ninth grades of the Lincoln School of Teachers College, Columbia University. These children were selected by their classmates as class presidents, student-council members, members of the school-magazine staff, athletic captains, science-club officers, and citizenship representatives. The outstanding characteristics were found to vary

with the type of activity in which the representatives were engaged. Scholarship was high for all types of leaders, but especially so for the student-council, magazine-staff, science-club, and citizenship representatives. Physical achievement was an outstanding characteristic of the athletic leaders but did not hold a prominent position among the other leaders. The leaders in all lines of activity had the same, or slightly less, chronological age than the average of the class. The girl leaders were about average in height, while among the boys, the class presidents and athletic captains were the tallest of their classes, and the magazine representatives were among the shortest. Extroversion was more marked than introversion in all the leaders.

In addition to the qualities referred to above, Block (1910) has listed another, that of fairness in settling disputes which arise within the group. Such a leader is regarded as the group's judge. Because he is fair-minded and does not take sides, the members of the group are willing to entrust decisions to him. Respect for the leader is thus based on character rather than on physical strength.

Partridge (1934) studied leaders in Boy Scout groups around New York City and in boys' camps. He found that the outstanding leaders excelled their fellows in every characteristic studied. They were all-round superior individuals as compared with their associates. The boys rated as most important traits for leadership the following, in the order of importance: (1) intelligence, (2) dependability, (3) appearance, and (4) athletic ability. There is usually some distinguishing physical characteristic about the group-leader. The outstanding leaders could be identified from the nonleaders consistently on the basis of voice or sight alone, but the identification was more accurate when both voice and sight were used.

Jennings (1937), in a study of leadership among girls, has pointed out that getting into a leadership position requires considerable exertion on the part of the person who attains this. If it comes by chance, to fill a void left by another, it won't hold. He also maintained that superiority of one sort or another does not assure the holding of leadership.

SOCIAL ACCEPTABILITY

Social acceptability—or "popularity," as it is generally called—is an index of the success with which an individual has taken his place in a social group and the extent to which his associates like to work and play with him. An active member of a group is not necessarily a popular member. Sometimes a child who is literally into everything and pushes himself into the different groups in his school class is thoroughly disliked by his classmates.

The importance of social acceptability lies in the fact that much of a child's social adjustment depends upon the degree to which his contemporaries find him acceptable. The child who is popular learns to get along with others and develops socially acceptable behavior because he is one of the group. The unpopular child, on the other hand, finds himself an outsider. In an attempt to force himself into the group that has excluded him, he develops many socially unacceptable forms of behavior, which add to his unpopularity and push him even further out of the group.

Popularity Traits. Traits that appeal to others vary from age to age and from group to group. There are, however, certain characteristics which have been observed in children who are rated by their associates and teachers as "popular" which are not found in those who are regarded as "unpopular." For the most part, these characteristics remain fairly constant throughout the childhood years and then change, to a certain extent, as the individual emerges into adolescence.

A child is well accepted in a group, Bonney (1943) found in the case of elementary-school children, because of what he is and what he does that wins the admiration of others. This means, Bonney pointed out, that positive personality traits are more important than negative virtues, as is shown by the child's refraining from doing things that others dislike. Strong positive traits and friendly attitudes he found to be necessary for popularity.

The personalities of socially acceptable children, Bonney (1943) reported, are characterized by aggressive or socially overt behavior traits. The well-accepted child, Bonney stressed, must possess many positive attributes which enable him to make himself count in a group. In other words, an individual is popular far more because of what he does than because of what he refrains from doing. If he does various things that make him stand out from the group and win admiration, he has a much better chance of being accepted, in spite of some obnoxious personal defects, than does the person who has no offending personal traits but who is unable to make his personality register on the group.

Northway (1943*a*) found no single trait or consistent behavior pattern to be associated with acceptance. The possession of a skill influenced acceptability for the activity in which the skill was used, but skills in themselves were not important to general acceptance. Northway maintains that the child's social acceptability is related to the degree and direction of his outgoing energy. The child, for example, who shows little energy and is listless and uninterested is always low in acceptability. The energetic child, by contrast, is, on the whole, acceptable unless his activity takes the direction of being annoying or inhibiting to his associates. Children of the latter type, Northway contended, are fairly

amenable to redirection, while those of the former type present a problem requiring careful clinical study and treatment.

Much the same results were reported by Bott (1928), who found that among nursery-school children the child who was active toward others was the one who received the most from them. The shy, retiring child, by contrast, was little noticed by the group. The best adjusted children had many friends, while children who presented distinct behavior difficulties had few friends.

The one factor indicative of the child's popularity, according to Lippitt (1941), is cooperation in routine activities as shown by the degree to which a child enters into a situation and adjusts to it. Quick, unobtrusive adjustment is characteristic of the popular child, while refusing, silly acts, dawdling, etc., all of which are indicative of poor adjustment, lead to unpopularity. Quick adaptation to the situation without making a disturbance is typical of the most popular child, while the reverse is true of the unpopular child.

Hardy (1937) likewise emphasized the importance of adaptability in determining the popularity of the child. Among elementary-school children, she found, the child who is held in high esteem by his classmates is not likely to be a troublesome child in the classroom. The child who receives the highest recognition from the group is unlikely to exhibit undesirable social traits in situations controlled by adult authority.

According to Koch (1933), the outstanding trait that makes for popularity among preschool children is acceptance of a situation, such as doing what the others do, offering no resistance, complying with requests, and accepting gracefully what happens. The child who is liked is conscientious and conforms to the group ways.

The ten traits associated with social acceptance, Bonney (1943) found, were tidy, leadership, friendly, welcomed, good-looking, enthusiastic, happy, frequent laughter, at ease with adults, and active in recitations. Kuhlen and Lee (1943) have listed the following traits as having the highest association with acceptability among sixth-grade boys and girls:

Boys	Girls
Cheerful	Friendly
Enthusiastic	Enthusiastic
Friendly	Good-looking
Popular	Popular
Good-looking	Initiates games

After a thorough analysis of the different traits found in popular elementary-school children as compared with children in the same grades who were unpopular, Hardy (1937) came to the conclusion that "social

recognition during the elementary school years is closely related to the individual's ability to distinguish himself from his associates."

Factors Influencing Popularity. Certain factors, it has been found from analyses of popular children, contribute to a child's popularity, while other factors actually militate against it. The different factors which influence the degree of popularity enjoyed by children throughout the preschool and elementary-school years are as follows:

1. *Sex.* While it is true that there are popular boys just as there are popular girls in any age group, there are indications that girls, as a group, enjoy greater popularity than do boys. Among nursery-school children, Koch (1933) noted that girls were more popular on the whole than were boys. A comparison of boys and girls in the fourth grades of three schools led Bonney (1944*a*) to the conclusion that girls show a consistent superiority over boys in social success as measured by social-acceptance tests. Bonney suggested that the cause of this difference may lie in the fact that, when boys do not acquire facility in social skills, they feel inferior and are likely to compensate in some socially disapproved ways.

In another study, Bonney (1942) has pointed out that girls of a given age are generally more highly socialized than are boys of that age and hence can make superior social adjustments. Hardy (1937) explained this difference by pointing out that training gained at home from experiences with brothers provides girls with a more satisfactory preparation for the give-and-take of group life than do contacts with sisters. She found the relation between social recognition and the number of brothers to be positive, while that between number of sisters and social recognition was negative. Hardy did not find, however, that the influence of sisters tended to be a handicap to social adjustments.

2. *Intelligence.* Is a bright child necessarily more popular than a child of average or below-average intelligence of the same age? Opinion differs on this matter. According to Koch (1933), the brighter children in the nursery-school group she studied were more popular than were their less bright classmates. Among elementary-school children, Hardy reported, the best liked children tended to be brighter and were distinctly more successful in school performance than were their classmates from similar home surroundings.

Bonney (1942*a*), on the other hand, found a low correlation between I.Q. scores and popularity. This, he explained, may be traced to personality traits. Very bright children, for example, are sometimes found to be inconsiderate of the rights of others or so indifferent to other children that they make no real attempt to adjust to the group interests. A definite relationship between good academic competence and social status was found to exist. Overage, retarded pupils make poor social adjustments and are, therefore, rated low in popularity.

3. *Size of Family.* According to tradition, the child who grows up in a large family will learn to make social adjustments which, when later applied to situations outside the home, will contribute to his popularity. Only children, on the other hand, are believed to be handicapped in social adjustments because of the concentration of attention which they receive at home and which they miss when they are not accorded the same treatment away from home.

Bonney (1944) reported that, among the elementary-school children he studied, there was a strong tendency for the more popular children to come from the smaller family units. The least popular children had more brothers and sisters near their own age with whom to associate in growing up than did the most popular. Similarly, Hardy (1937) noted that the preferred playmates in the groups she studied were from smaller sized family units. The best liked children had, on the average, two siblings, while the average child in the study had three siblings. Least liked children came from families of four or five children.

Only children, Bonney (1942*a*, 1944) found, were consistently superior in social success to other children. In an attempt to explain this, Bonney discovered that the only child came from a slightly superior socioeconomic group, but did not have higher intelligence rating than did the less popular children.

4. *Socioeconomic Status.* The most popular children, according to Bonney (1944), come from homes which are decidedly superior to those of other children in cultural, social, and economic factors. A survey of the home environments of children, Hardy (1937) reported, revealed wide differences between the surroundings of the best liked children and those of their associates. Data showed conclusively that the socially successful group came from superior home conditions, while the unpopular children came from inferior home environments.

5. *"Halo" Effect of Popularity.* According to popular belief, "nothing succeeds like success." In social as well as in business life, it is generally conceded that the successful individual has an advantage over those who are less successful or who are unable to create the impression of being as successful as he. This "halo" effect of success plays no small role in determining who will be popular and who will not.

Popularity, Bonney (1942*a*) noted, was quite highly concentrated in a few pupils, with a tendency for a large section of the children to choose a few children who stood out at the top. Popularity was found to be quite stable—children who were the most popular in the classroom proving to be most popular on the playground as well.

Potashin (1946), in a study of fifth-, sixth-, and seventh-grade children, discovered that, when a child had a close personal relationship with another child, he was generally well accepted by his classmates. The

child without a friend may not be rejected by other children but he is not generally sought out as a companion by his classmates. To remedy this, he frequently makes "unreal" choices by indicating preferences for classmates who are impossible for him, instead of selecting from within his own experience. He chooses the "stars" or idols of the class, with whom he may have very little contact if any. He is thus protected from rebuff, Potashin explained, and can rationalize about them as one might about a motion-picture celebrity.

6. *Physical Condition.* A healthy child is, likewise, more apt to be a happy child than is one whose health is poor. It is, therefore, reasonable to expect to find that healthy children are better adjusted to their social groups than are less healthy children. Hardy (1937) noted that among the elementary-school children she studied the most popular children were vigorously healthy and, on the whole, were in a better all-round condition than their classmates. The popular children were likewise markedly superior to the other children in tests of physical achievement and, as a group, were unusually proficient in the type of playground activities commonly engaged in by boys and girls of that age.

7. *Looks.* While younger children are not so "looks-conscious" as they will be when they reach the age of adolescence, they are not unaware of the attitude of others toward physical attractiveness and unattractiveness. Looks are taken into consideration in the selection of friends and leaders, even though this factor may play a minor role, as compared with the role it plays during the adolescent years.

In Hardy's (1937) study of elementary-school children, two-thirds of the popular children were described as having an attractive appearance, while less than one-fifth of the unpopular were so described. In the unpopular group, 26 per cent were classified as "homely," when contrasted with 5 per cent of the popular group. This means, Hardy stressed, that the children others like and choose as their best liked playmates are, as a group, attractive.

Size does not appear to have been a significant factor in popularity. Short boys and tall girls were found in the best liked group, as well as tall boys and short girls. No child called "ugly" was listed among those whom the children said they most desired to be, and no child who was described as "very attractive" was found in the group that the children said they cared least about.

8. *Personality.* The role played by personality in determining the popularity of children has been studied by Bonney (1942*a*). According to his findings, most of the generally recognized desirable personality traits—such as a cheerful disposition, being generous and considerate of others, having an attractive personal appearance, being cooperative in

group endeavors, and having a good sense of duty—were found to be more common among the popular than among the unpopular children. Some of the most popular children were found to have personality traits that are generally considered to be unfavorable, such as being dominating or bossy, being a show-off and striving for attention, while unpopular children were found to have certain very desirable traits.

Persistence of Popularity. Will a child who is popular in preschool remain popular throughout his school years or, when he is older, will he lose out to a child who is at present less popular than he? Several studies have been made which throw light on this question.

A child's social position, Bonney (1943, 1943*b*) reported, remains approximately constant from grade to grade in the elementary school. This means that the socially strong stay strong, the average stay average, and the weak stay weak.

It is not so easy to gain popularity as many believe. Bonney contends that a child who is maladjusted in one group will not be better off by changing to another group. On the other hand, the child who is popular in one group is likely to establish himself in other situations. Furthermore, it is very difficult to change the impression that a child makes upon his group. If he antagonizes the other children, or if he loses favor with them, it will be a long, hard process to reinstate himself in their favor.

Social Isolates

In every social group, there are isolated members or "outsiders" who, for one reason or another, do not seem to belong and who are not popular with the rest of the group. The social isolate is an unhappy individual, who is likely to develop unfavorable personality traits which will add to his unpopularity.

Whether or not a child will be popular in a given group depends partly upon his own qualities and partly upon the group. A child who is too different from the other members of the group in appearance, intelligence, personality, family background, interests, or any one of a number of different traits, is likely to be regarded by the group as "queer" or "different." As such, the child will not be an acceptable member of the group.

Hollingworth's (1926) report of the experience of a very bright boy illustrates how being different from the group can cause a child to become a social isolate. A very bright boy, in a class of children of average intelligence, found himself to be practically isolated from the social life of the group. When he was transferred to a special class for

bright children, he was noticed and appreciated because of his unusual abilities. As a result, his days of social isolation were over.

In a study of unpopular children, or those with few friends, Northway (1943*a*, 1944) noted three kinds of personality patterns, which were classified as follows:

1. The *recessive child*, or one whose interests are seriously ingrown and who lives within himself.
2. The *socially uninterested child* who, like the recessive child, is quiet and retiring. But, he differs from the recessive child in that he may have some real interest of a nonsocial type, such as music, crafts, working out scientific problems, or discussing the affairs of grown-ups. This type of child is "bored" with school groups and their interests. Other socially uninterested children lack other interests but are shy and hesitant in social situations because they have been hurt or have failed in them, or because they have been overprotected from children of their own age by overzealous parents.
3. The *socially ineffective child* is often noisy, boastful, and ill-disciplined. He may be ingratiatingly sweet to those in authority and a bully when he thinks no one is watching him. Because he does not feel securely accepted, he uses different methods to achieve social attention and acceptance; but his social attitude does not always lead to acceptance.

Loeb (1941) found that children who were least acceptable to their age mates could be divided into two groups: (1) the quiet, reserved children, and (2) the aggressive or "problem" children. Sixth- and eighth-grade children who were discriminated against, Frenkel-Brunswik (1946) reported, were more talkative and attention-getting, less conforming to adult values, less trustworthy, less helpful, more frustrated and complaining than those who were more popular. An attitude questionnaire showed them to be pseudotough, superstitious, and cynical.

Among preschool children, the unpopular child, according to Koch (1933), is one who attacks vigorously, who strikes frequently or pushes and pulls. Personal affront and lack of respect for property rights do not meet with favor. The unpopular child also shows frequent escape reactions, such as running away, clinging to an adult, hiding from an offender, playing alone, seeking the company of younger children, etc. He dawdles, refuses the requests of others, and fails to conform to routine.

Traits having the lowest association with acceptability among sixth-grade boys and girls, Kuhlen and Lee (1943) listed as follows:

Boys	Girls
Enjoys fight	Bosses others
Acts older	Talkative
Seeks attention	Seeks attention
Bosses others	Enjoys fight
Talkative	Restless
Restless	

Popular vs. Unpopular. In a comparison of five very popular with five very unpopular children, Bonney (1947) analyzed these 10 trait syndromes for each group:

1. *Physical Health and Vigor.* The popular children were all physically strong, healthy, and vigorous. Not one of them had suffered a serious illness during the entire 5 years of the study or had ever complained of physical ailments of any kind. They had no obvious physical defects and had been extremely regular in school attendance. The unpopular children, while not definitely in poor health or deficient in vigor, were not outstandingly good in these respects. None were sick a great deal. The difference between the two groups in health factors was not marked enough to account for the difference in social acceptability.

2. *Conformity and Group Identification.* All the popular children liked school and identified themselves to a marked degree with the school situation. In dress, grooming, and manners, they were in complete accord with their group norms, as was true also for their attitudes and personal conduct. They were integrated with their groups, and their groups were a vital part of themselves. The unpopular children were noticeably weak in conforming behavior and in a feeling of identification with their respective groups. They did not "fit in" to the social whole, but played a lone hand or fought a lone fight by overt aggression or other forms of attention-demanding behavior. Because they could not adjust themselves to the group needs and goals, they tried to force the group to take them on their own terms.

3. *Emotional Stability and Control.* The popular children did not have an excess of physiological tension or emotional stress needing to be released in unproductive ability. Rather, they had emotional control, which provides assurance and a sense of security to their companions. The unpopular child, by contrast, lacked emotional control.

4. *Arousing Admiration.* This was accomplished through high intelligence, personal appearance, abilities, industriousness, courage, etc. A marked amount of any personal trait may be a source of admiration. In this respect, the unpopular children were decidedly weak. Not one possessed any particular trait or ability which won the respect of the group.

5. *Social Aggressiveness.* This took the form of initiating social contacts and social events. The popular children all took active roles in some kinds of group situations, showing initiative and leadership ability and making themselves count in their groups. The unpopular, likewise, showed social aggressiveness but of a different type. They did not offer constructive suggestions, never took leadership roles, did not volunteer to promote a group purpose or to participate actively in group discussions.

6. *Adaptability and Tolerance.* Poorly accepted children were found to be low in these traits, especially adaptability.

7. *Dependability.* This was very marked among the popular children, as seen in their having their schoolwork in on time, learning lines for plays, or bringing from home materials they promised to bring. The unpopular children lacked a sense of obligation in relations with others.

8. *Dependence on Others for Assistance and Emotional Support.* Popular children showed a democratic relationship with one another. They cooperated in common endeavors and trusted one another. They were not conceited or egocentric. Not one of the unpopular children showed the essentials of democratic behavior. They did not know how to share problems or to trust their classmates. Rather, they tried to dominate them.

9. *Providing New Experiences for Others.* Some such attitudes were showing a sense of humor; being gay, jolly, enthusiastic, etc. The popular children all showed a capacity for dramatization, were cheerful and optimistic, joked, and were sometimes mischiveous. The unpopular children did not offer anything new to the group except perhaps superdramatics, nor were they consistently cheerful.

10. *Social Service Motivation.* This was accompanied by an attitude of good will toward others, as shown in being helpful and considerate, standing up for the underdog, being unselfish, etc. All popular children showed this trait. The unpopular and the popular were more distinctly separated on this trait than on any other. The unpopular children showed jealousy and resentment over the success of others. They were selfish and did not volunteer to help others.

TEXT-FILM

The following McGraw-Hill Text-Film is recommended for use with Chapter IX.

Social Development (16mm sd MP 1½ reels). Offers an analysis of social behavior at different age levels and the reasons underlying the changes in behavior patterns as the child develops. The infant is the passive bystander in the social scene, the preschool child is aggressive in his play activities, and only after several years of learning does he play cooperatively with others of his age group. Points out development from the stage where sexes and ages are mixed indiscriminately to the age when children begin to pick members of their own sex as playmates, and to seek out the natural leader for their groups. All these patterns mix and overlap, but at different age levels there is a definite organization to children's social behavior. The film shows the emotional conflicts that come with the "gang age" when home and family are no longer the center of the child's world. It stresses the point that while the child must meet and solve each problem as he reaches that level of growth and development, guidance from understanding adults can make the adjustment infinitely easier and smoother.

Silent follow-up filmstrip, based on material contained in the motion picture, offers opportunity for review, testing, and further discussion.

CHAPTER X

PLAY

The play of children is one of the most commonly observed activities of child life. Parents, educators, and public officials recognize its importance for child development, and each year more and more provision is made for play, whether at home, in school, or in public playgrounds. Because play is so important in the development of the child, psychologists have studied it not only from the point of view of the favored forms of play at different ages but also from the point of view of individual differences and the effect play has on the child's mental and physical development.

Definition of Play. *Play* is a term so loosely used that its real significance is apt to be lost. It relates to any activity engaged in for the enjoyment it gives, without consideration of the end result. It is entered into voluntarily by the individual and is lacking in external force or compulsion. The individual plays for the fun of playing and for no ulterior motive. It differs from *work*, which is an activity toward an end, in which the individual carries out the activity not because he enjoys it but because he wants the end result.

Some writers have attempted to make a distinction between work and play activities, but there are no activities which may be classed as either one exclusively. Whether they belong to one category or the other depends upon the individual's attitude toward them. Collecting may be a form of play for a child or an adult who makes it a hobby, but it may also be work for the person who collects articles to sell at a profit. Drawing may be a pleasant pastime, engaged in by child or adult, but, if the motive is to enter one's drawings in contests to compete for prizes, or to earn a living as an artist, drawing becomes a form of work rather than play. Any time that a play activity is directed toward an end other than enjoyment, as in the case of competitive games and sports, it assumes the aspect of work.

Source of Play Activities. Many play activities of young children are imitations of adult activities. The child, in his play life, reproduces the activities he has observed among the adults of his environment. Because the activities in any community are more or less stereotyped in form, especially the activities of the home, the play of little children is

very similar, regardless of the neighborhood environment in which they have been brought up. As children grow older and begin to associate with other children, their play is in imitation of the play of older children of the community. One generation passes down to the next generation the forms of play which it has found most satisfactory. Many of these traditional forms of play are outgrowths of primitive ceremonies which once were solemn and serious.

VALUE OF PLAY

Play is such an accepted part of child life that few people stop to consider how important its role is in the development of the child.

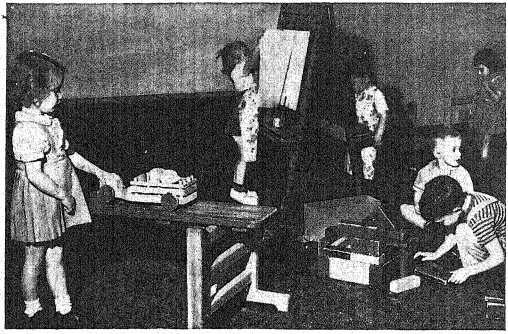

FIG. 58. Play gives the child an outlet for the desire for social contacts which is rarely satisfied in the home. (*Courtesy of the Cleveland Plain Dealer.*)

Physically, play is essential if the child is to develop his muscles properly and exercise all parts of his body. Active play also serves as an outlet for surplus energy which, if pent up, makes the child tense, nervous, and irritable.

Without play, especially play with other children instead of with adults, the child becomes selfish, self-centered, and domineering. From his play with others, he learns to share, to give, and take, to cooperate and to submerge his personality into that of the group. It is true that he might learn to *behave in a social manner* through his contacts with other children in school, but the typical school class or school-supervised play offers little opportunity for social behavior, as compared with free play outside of school. It likewise gives the child an outlet for the desire for

social contacts which is rarely satisfied in the home, unless there are many children of approximately the same age, or in school, where too many restraints are placed on free social intercourse.

Play is *educational*. The young child, through his play with toys of all types, learns to know the shapes, colors, sizes, and textures of objects, and their significance. Later, as he grows older, he develops many skills from playing games and sports. Exploring, collecting, and other favored forms of play in late childhood furnish the child with much information about the world he lives in that could not be obtained from school books. Reading, plays, concerts, and well-selected movies broaden the child's information while at the same time giving him much enjoyment.

Play is *therapeutic*. As was pointed out in the section dealing with methods of studying children in Chap. I, a variety of techniques have been used to utilize play as a therapeutic measure in the release of emotional tensions. In everyday life, the normal child needs some release from the tensions that the restrictions imposed on him by his environment give rise to. Play serves this purpose.

Finally, play is one of the most important forces in the *moral training* of the child. True, he learns what the group considers right and wrong in the home or in the school, but the enforcement of the acceptance of moral standards is never so rigid there as in the play group. The child knows that he must be fair, honest, truthful, a good sport, a good loser, and self-controlled if he is to be an acceptable member of the play group. He also knows that his playmates are far less tolerant of his lapses from the accepted codes of behavior than are the adults of his home and school environments. He therefore learns to toe the mark more quickly and more completely in play than at any other time.

CHARACTERISTICS OF CHILDREN'S PLAY

The play of children is in many ways different from that of adults. There are also certain characteristics of child play which may be found in whatever group of children one studies. These outstanding characteristics serve to show how different child play is from adult play. The outstanding characteristics of child play are as follows:

1. Play Follows a Pattern of Development. From early babyhood to maturity, certain definite play activities are popular at one age or another, no matter what the environment, the nationality, or the economic status of the child. Even though the popularity of a given type of play may rise and fall and the form of activity change with increase in maturity, there is no definite beginning or end to a given play activity. The time when the play is especially popular, however, is much the same from one group of children to another.

Toy play is engaged in during early childhood and reaches its peak around the seventh or eighth year. Following this comes a decided interest in running games and, after that, sports with strict rules and regulations become the favorite pastimes. Likewise reading interests and interest in movies, music, pets, and collecting, all occur in a more or less regular order and at times which conform to a pattern of development.

Gesell (1940) has made an extensive investigation of the play of children during the first 5 years of life and has noted a definite sequence in the development that occurs during that period. In the accompanying table are given the characteristic forms of play at successive ages.

TABLE XLII. DEVELOPMENTAL SEQUENCES IN PLAY ACTIVITIES

15 months	1. Endless exercise of walking activities. 2. Throws and picks up objects and throws again. 3. Puts one object after another in and out of receptacles.
18 months	1. Very rapid shifts in attention especially expressed by gross motor shifts. Moves actively from place to place and "gets into" everything. 2. Pulls toy. 3. Carries or hugs doll or teddy bear. 4. Imitates many things such as reading newspaper, sweeping, dusting. 5. Solitary or onlooker play.
24 months	1. Less rapid shifts in attention. Interest in dawdling and manipulating play material to feel, pat, and pound. 2. Interest in dolls and teddy bears (domestic mimicry); beads (strings them), or drops them in holes in tops of boxes or cans only to dump them out and repeat the process; blocks and wagons (transports blocks in wagon more than building with them). 3. Does not imitate things which he remembers, but only those events which are present to his senses. 4. Parallel play predominates when with other children, though he obviously enjoys being with other children. 5. Little interest in what other children do or say, but may hug them or push them out of the way as though they were physical objects. 6. Little social give-and-take but much physical snatch and grab accompanied by defending rights by kicking and pulling hair which may end in hilarious scuffle. 7. Does not ask for help; adult must be constantly watchful and ready to help him without waiting to be asked.
36 months	1. Dramatization and imagination beginning to enter into play. 2. Interest in combining playthings such as blocks and cars, making roads, garages, and bridges. 3. Increasing interest in playing with other children rather than playing alone. May play in groups of two or three, but these are constantly shifting in make-up and activity. 4. Cooperative activity taking the place of physical contacts. 5. Is willing to wait his turn. 6. Will put away his toys with some supervision.

TABLE XLII. DEVELOPMENTAL SEQUENCES IN PLAY ACTIVITIES (*Continued*)

48 months	1. Considerable increase in constructive use of material and in manipulation and dramatization of play.
	2. Has very complicated ideas but is unable to carry them out in detail, and has no carry-over from day to day.
	3. Prefers to play in a group of two or three children. Often chooses favorite companion of own sex.
	4. Suggests turns but is often bossy in directing others and is often silly in his play and may do things wrong purposely.
	5. Puts away toys by himself.
	6. Marked rise in activity.
	7. Likes to "dress up."
60 months	1. Very fond of cutting out and pasting and in working on a specific project, such as a store or a boat (project is carried over from day to day), and in dressing up in adults' clothes.
	2. Definite interest in finishing what he has started even though it takes several days.
	3. Plays in groups of two to five. Friendships are becoming stronger.
	4. Spurred on in activity by rivalry.
	5. Interest in going on excursions.

Source: GESELL, A. *The first five years of life.* New York: Harper, 1940, pp. 251-252. Used by permission.

From the genetic sequence of activities listed above, it may be seen that the play of little children passes from simple motor activities with toys to socialized play and then to dramatic and constructive play.

Partridge (1938), in a study of the play of boys in New York City, found a definite increase in interest in riding in an auto and arguments, and a steady decline in interest in cowboy movies, making airplanes, marching in a parade, and detective stories from twelve to seventeen years of age. Studies of doll play have indicated that interest in dolls reaches a peak before puberty and after that shows a rapid decline. Block building, Johnson (1933) noted, passes through four distinct stages in development. In the first stage, the child gets experience by handling, carrying, and piling blocks in irregular masses; in the second, construction of rows and towers begins; in the third, patterns and techniques develop; while in the fourth, the child dramatizes and reproduces actual structures.

2. Play Activities Decrease in Number with Age. Late childhood is often described as the "play age," not because more time is devoted to play, as the name would suggest, but because a greater variety of play activities is engaged in than at any other time. There is an overlapping of the play activities characteristic of childhood and those of the adolescent years. Consequently, it is not at all unusual to find the nine-year-old playing with dolls, trains, or other childhood toys while at the same time taking an active interest in sports of the high-school or college ages, such as baseball, basketball, or football.

Investigations of the number of play activities engaged in at different ages have shown that young children engage in a larger number than do the older ones. The eight-year-olds studied by Lehman and Witty (1927*d*) reported an average of 40.11 different play activities engaged in during a week, as contrasted with an average of 17.71 per week in the case

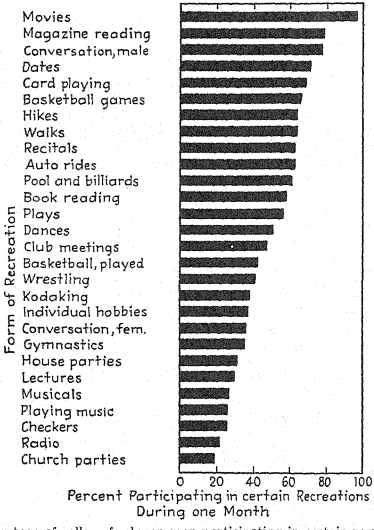

FIG. 59. Percentage of college freshmen men participating in certain recreations during one month. (*Based on data of S. M. Stoke and W. F. Clive, The avocations of one hundred college freshmen. J. appl. Psychol.*, 1929, **13**, 257–263. *From F. K. Shuttleworth, The adolescent period, Monogr. Soc. Res. Child Develpm.*, 1938, **3**, *No.* 3. *Used by permission.*)

of those twenty-two years old or older. Social play activities, involving play with other children, likewise decrease in number with age. At 7½ years, an average of 27 are engaged in, as compared with 21 at 11½ years, and 13 at 16½ years (Witty, 1931). In Fig. 59 is shown the limited number of recreational activities engaged in by adolescent college students.

Decrease in the number of play activities is due partly to less time available for play, partly to a greater understanding of their interests and abilities on the part of the members of the older group, and partly to a

longer attention span which enables older children to enjoy one play activity for a longer time than is possible with a younger child.

3. Time Spent in Play Decreases with Age. Babies and young children spend most of their waking time in play. Except for bathing, dressing, eating, and toileting, the young child's waking hours are free to spend as he wishes. As he grows older, however, his leisure time decreases because of new duties imposed on him and because of the time spent in school. The result is that the child must select from the different play activities those which please him most and concentrate on them. This becomes increasingly true as the child reaches adolescence and his leisure time is more and more limited.

4. Time Spent in Specific Play Activities Increases with Age. Because of poor concentration, little children go from one toy to another or from one play activity to another. The result is that they must have a large number of playthings if their interest is to be sustained. This holds true for being read to or hearing stories. The young child can listen for only a short time before his attention wanders to something else.

Observations of the play of nursery-school children by Van Alstyne (1932) revealed that at two years the average span of attention was 6.9 minutes; at three years, 8.9 minutes; at four years, 11.4 minutes; and at five years, 12.6 minutes. The length of time spent in a specific play activity depends also upon the activity itself. The longest median time a three-year-old spent in one activity Bridges (1929) found to be 15 minutes in brick building, and the shortest 3 minutes, on the lacing frame. The median time a four-year-old spent in one play activity was 6.2 minutes. This, Bridges explained, arose from the fact that four-year-olds can complete a given play activity more quickly than three-year-olds, and the shorter time therefore represents greater speed rather than lack of concentration.

5. Childhood Play Is Informal. The play of little children is spontaneous and informal. The child plays when and with what toys he wishes, regardless of time or place. He does not need special play equipment. As a matter of fact, he often derives more pleasure from playing with objects belonging to adults than from his toys. Likewise, he does not need special play clothes. He plays just as often when dressed in his best clothes as when he is wearing play clothes. A special place reserved for play is not necessary at this age; and he does not make appointments to play at a certain time, as adults do.

Gradually, play becomes more and more formal and much of the spontaneity of the child's play disappears during adolescence. Even during the gang age, the child feels that special clothing, as a baseball suit; special equipment, as a tennis ball instead of a rubber ball; and a special place

for play, as a baseball diamond or tennis court, are essential. Appointments to meet and play at a definite time are made, and each player is expected to appear promptly so as not to inconvenience the other players. This trend toward formality in play increases every year, with the result that, in adolescence, play is a serious thing, and not the informal, casual activity that is so enjoyable to the young child.

6. Play Is Less Physically Active as the Child Grows Older. The adolescent's play involves little energy. This contrasts markedly with the play of little children, which is very active. Likewise, it is very different from the play of older children, who prefer games and sports of the most active type and who care little for the sedentary play activities so popular during the adolescent years.

PLAY IN EARLY CHILDHOOD

Play, at first, is very simple, consisting primarily of random movements and stimulation of the sense organs. Later, with development of intelligence, play becomes increasingly complex. There are three different forms of play engaged in by young children: (1) *free, spontaneous play;* (2) *make-believe play;* and (3) *constructive play.* Each of these begins as a simple activity and becomes more complex with increase in intelligence and motor coordination.

1. Free, Spontaneous Play

The earliest play to make its appearance is free, spontaneous play. This type of play is characterized by lack of rules and regulations and is, for the most part, solitary rather than social. The child plays as he wishes to play and stops playing when he is no longer interested in it. This is especially pleasurable in the case of young children who find it difficult to play in a definite way or to conform to rules and regulations. Informal play of this type loses popularity late in childhood, when competitive games are more favored. By the time the boy or girl reaches adolescence, there is no longer an interest in the free, spontaneous play that proved to be so enjoyable to the young child.

Play of this type is mostly exploratory. The baby derives keen enjoyment from stimulating the sense organs and thus experiencing different sensations. At first, most of his play is with his limbs because lack of motor coordination makes play with toys very difficult. By the time the baby is three months old, control of his hands is well enough developed to enable him to play with toys or any objects within his reach. He explores his toys by sucking, banging, and pulling at them and investigates objects such as cloth, fur and wool, eyeglasses, or watch chains.

Pattern of Free, Spontaneous Play. Shirley (1931*a*) studied locomotor play, or play involving gross motor activity, in babies under two years of age. She found that their play conforms to a general pattern of locomotor development, accompanying skills of different orders. The pattern she found was as follows:

First-order Skills. Birth to twenty weeks. There are only a few play responses at this age, consisting mostly of reaching for objects, stepping, turning from back to side, kicking, bouncing, wiggling, and reaching for the toes. At this age, motor play is mostly for exercise rather than for the enjoyment of the activity.

Second-order Skills. Twenty to thirty-four weeks. At this time, play loses its random, hit-or-miss character. It consists of play with the toes, bouncing, squirming, head shaking, leaning, dancing, pulling self to a stand, and cooperative motor games, such as "pat-a-cake" and "rockabye-baby."

Third-order Skills. Thirty-two to forty-five weeks. Play activities at this age include kicking, bouncing, leaning over chair arm or carriage, rolling, playing with toes, pulling self to a sitting position, crawling for toys, or trying to stand.

Fourth-order Skills. Forty-one to fifty weeks. With increased skill, the baby's play is more developed in form and includes play in a sitting posture, climbing, standing, creeping, and moving furniture.

Free, spontaneous play involves the use of toys, though toys are not essential. After the child has explored his toys extensively enough to find out how they work, he uses them for make-believe play or construction. Owing to poor motor coordination, the little child, during this exploratory period, is apt to be very destructive. He pulls to pieces or breaks his toys, not willfully, but unintentionally, because they are not strong enough to withstand the strain that the child's exploratory behavior places on them. This holds true also for household articles, which he explores whenever he has an opportunity to do so.

By the end of the second year, the child turns his attention to more advanced and complicated forms that tax his developing mentality to a greater extent than the simple, free play of babyhood. At times, he reverts to this play for a year or two, but with each year, it becomes less and less satisfying to him. As a result, he abandons it in favor of play of a more advanced, more highly organized type.

2. Make-believe Play

Make-believe play is play in which the child, through language or overt behavior, deals with materials or situations as if they had attributes other than those they actually have. Dramatic impersonation begins

between the ages of 1½ and 2 years. Children learn much of their make-believe play from older children, especially siblings. In a group of children of wide age range, there is more imaginative behavior than in a group of the same age and sex, because the younger children learn imitatively from the older children in the group (Markey, 1935).

Pattern of Make-believe Play. Studies of make-believe play in children have shown that it follows a definite pattern in its development. Markey (1935) noted that children under three years of age showed a predominant interest in *personification*, such as talking to dolls or inanimate objects, or games involving imagined creatures, as a "bogey man"; in *make-believe use of materials*, including the imaginative naming of objects, as calling a slide a train, or simple, overt, imaginative behavior, as drinking from an empty cup, and in *make-believe situations*, involving a complicated use of materials, such as playing house. In most instances, their play is related to the materials before them. After three years of age, *make-believe use of materials* proved to be the most typical imaginative activity. As children grew older, the materials were used in increasingly more complicated ways, such as using sand to build a tunnel instead of merely digging into it with a shovel. In addition to this, children after three years of age engage in play involving *make-believe situations, constructive activities* with raw materials, and *dramatic play* of a more or less complicated type.

Forms of Make-believe Play. The make-believe play of children is a mirror of the culture which surrounds them, in that it dramatizes events of their everyday lives. In a sample of approximately 300 episodes, Murphy (1937) found the following patterns of imaginative play: (1) *domestic patterns*, including playing house, furnishing a house, cooking, eating, having tea parties, taking care of babies and being fathers and mothers; (2) *selling* and *buying;* (3) activities connected with *transportation*, as riding in automobiles or trains, being engineers, putting in gas or air, and sailing boats; (4) *punishing*, playing policeman, and gun play in general; (5) *burning* and playing fireman; (6) *killing* and *dying;* and (7) playing the part of *legendary persons*, as Santa Claus, Cinderella, and the Big Bad Wolf.

Parten (1933) found "playing house" to be very popular with preschool children. The younger children were passive participants who allowed themselves to be led around by the older ones who had assumed roles of "mother" or "daddy." The two- and three-year-olds imitated home situations, playing alone generally, and dressed or undressed their dolls, put them to bed, or rocked them. Children over three years of age "played house" as a complex activity, in which they reenacted events of the home, such as setting the table, having the doctor for a sick baby,

calling on the telephone, taking a doll for a ride in a coach, spanking a doll, and putting it to bed. This play sometimes involved the use of younger children as "babies" in place of dolls. Figure 60 shows how domestic work is enjoyable play for a little girl.

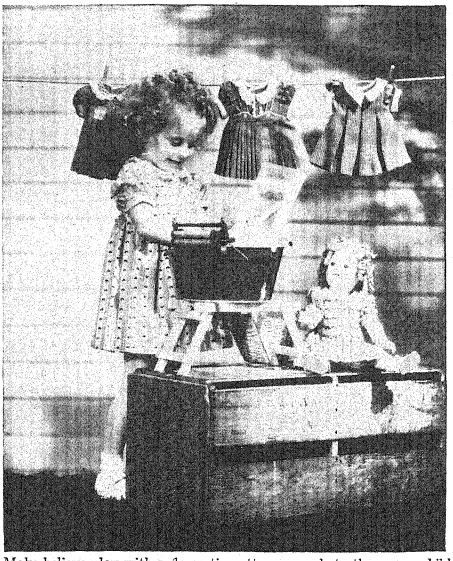

FIG. 60. Make-believe play with a domestic pattern appeals to the young child. (*From Parents' Magazine, August*, 1939. *Photograph by Frederick Bradley. Courtesy of Parents' Magazine.*)

Older children dramatize the stories they have heard or read and the movies they have seen. Instead of playing that they are people of everyday life, they play that they are fairies, Indians, Napoleon, Robin Hood, "G" Men, or bandits. "Playing school," Lehman and Witty (1926) observed, is a popular form of dramatization after children reach the school age. It is, however, more common among Negro than among white children, and this, they explained, is a form of compensation.

Dramatizations are reproduced with astonishing fidelity and even the

tone of voice of the person imitated is copied so well that one could almost believe the real person was speaking. Few stage properties as such are needed. A hat, cane, long skirt, or some articles of clothing usually associated with the person imitated is all the child needs to imagine that he is that person. A rug placed across two overturned chairs or the carpet pulled up at one end for the child to crawl under serves as a tent, a den, or a cave. The basement becomes an ogre's den, the hallways of the house are secret passages in a castle, and the lawns, the battlefields where important contests are fought. Each year, as the child grows older, he pays more and more attention to details, with the result that stage properties are increasingly important to his dramatizations.

3. Constructive Play

Interest in construction is an important element in the play of children. Up to the age of five or six years, construction is more or less a matter of chance. The child puts together objects without a preconceived plan or pattern, and if, by chance, they should resemble a familiar object, he is delighted with his achievements. From the age of six years, materials are used specifically and appropriately for building and construction.

Forms of Construction. Early forms of constructive play consist of making mud pies, constructing mountains or tunnels from sand, and playing with blocks, beads, scissors, clay, paint, crayons, and paste. The child uses these to make things that have a definite meaning and can be recognized as such, though their practical use is of secondary importance. Guanella's (1934) study of block-building activities revealed that shortly after the second year children gave names to their structures, as "house" and "boat." After the third year, block construction was coordinated with dramatic play. Figure 61 shows how block building can engross the attention and interest of children.

Constructive play is popular in late childhood and manifests itself in the building of tents, playhouses, huts, snowmen, and dams. It generally takes the form of large, crude work in the case of boys and is carried out in connection with their outdoor play. Among girls, on the other hand, construction is of a finer and more delicate sort, as is seen in making doll clothes, paper dolls, and drawings; in painting or clay modeling. Because of its popularity at this age, it is one of the important phases of the routine life at summer camps for boys and girls. Here, all kinds of articles are made, such as stools, benches, shelves, baskets, rugs, costumes and scenery for plays, and even hand-made jewelry.

At first, the child is pleased with whatever he makes and proudly displays it to anyone who happens to be present. Later, however, he

becomes more critical of his workmanship and not only ceases to boast about it but often covers it up or even demolishes it if others come to look at it. This is especially true of drawing and painting. As the child reaches the adolescent years, his interest in constructive play wanes

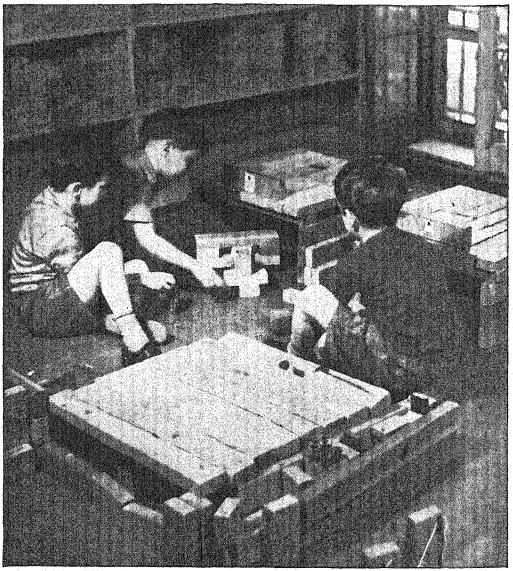

FIG. 61. Block building is a favorite form of constructive play. (*From Parents' Magazine, March,* 1938. *Photograph by McCambridge Photographers, New York. Used by permission.*)

rapidly, unless he has a definite talent for painting, carving, or clay modeling. Under such conditions, it becomes a hobby which is engaged in as his favorite form of solitary play, then and into maturity.

Drawing. One of the most frequently used outlets for the creative fervor is drawing. Owing to poor muscle coordination, the young child cannot actually draw, but he takes keen delight in scribbling in which he makes crude and often totally aimless movements with pencil or crayon. To him, drawing is a means of expression rather than a means

of creating beauty. The finished product is far less important than the creation of it.

Drawing is an expression of what is uppermost in the child's mind at the moment. His first drawings are symbolic and are not direct copies of objects. The child draws things as he remembers them, but he is not interested in perspective, proportions, or relationships. He puts in details that interest him, such as buttons on a coat, while at the same time omitting essentials, such as a man's body or the engine of an automobile.

Later, as the child becomes more mature, he outlines or sketches objects partly from memory and partly from direct observation of them. From about the sixth year, the child tries to reproduce in his drawings what he sees and begins to show regard for size, perspective, and correctness of detail. Throughout the early years of childhood, the child shows more interest in color than in form and prefers crayons or paints to the use of pencil.

Stages in Drawing Ability. Experimental studies of children's drawings have shown that the ability to draw follows a more or less definite pattern of development. In a study of preschool children, Gesell (1940) noted the following pattern in drawing ability:

At 12 months. Marks by banging or brushing.
At 18 months. Scribbles but marks off page.
At 2 years. Scribbles, but better defined than at 18 mo. and rarely goes off paper.
At 3 years. Names drawings but hard to see object named.
At 4 years. Rarely scribbles. Rather, drawing takes on form and meaning.
At 5 years. Drawing clearly recognizable for what child names it to be. Differentiates parts.
At 6 years. Drawings show improvement in precision and detail over those of five-year-old.

Waddle (1918) has listed four stages in the development of drawing. (1) The first is the "scribble stage," from two to five years, when the child's drawing is random and later suggests an object, to which the child attaches a name. (2) The "artistic illusion stage," from five to twelve years, is a noncritical and imaginative stage in which the child can depict what is in his mind, even though his drawing is symbolic rather than pictorial, with little attention to symmetry and proportions, but with much attention to decorative details, as buttons and hats. (3) In the third, or "self-conscious stage," which begins around the age of twelve years, the child comes under the influence of a teacher or someone who makes the child self-conscious about his work. This leads to discouragement and loss of interest, which, in turn, causes many children to give up drawing. (4) The final stage recognized by Waddle, the "rebirth of artistic ability," occurs from the fifteenth or sixteenth year and in the

case of only a few individuals. At this time, drawing is an artistic achievement, in which the adolescent for the first time is interested in the artistic value of his product.

When Ames (1945) had nursery-school children complete an incomplete drawing of a man and make a free drawing of a man, she found that the laws of sequence seemed to determine the ages at which the various parts of the man appeared in the drawings, regardless of whether the drawing was of the free or of the completion type. A partial figure, she found, can hasten the addition of parts of the drawing but it does not distort the order in which the parts emerge. Eyes, for example, appear first on the head in free drawings. They tend to appear first in completion drawings, even though the arms and legs, not the eyes, are suggested by the forms given.

An analysis of the drawings of simple forms, such as circles, squares, and triangles, by Gesell and Ames (1946) showed marked developmental changes in the direction, order, and orientation of the lines drawn. The outstanding developmental changes they summarized as follows:

Vertical line: Moves gradually from directly on the model, across the paper to the right and then back to near the left-hand margin. The line gradually lengthens.

Horizontal line: Moves gradually down the page, finally returning to one-fourth down from the top. It gradually lengthens.

Circle: Is first copied counterclockwise, then clockwise, and then again counterclockwise. At the earliest ages drawing starts at the top of the circle, then later at the bottom, then still later again at the top.

Square: The trend is from four separate lines which overlap to the corners to a one-line figure with square corners. The order of drawing the four sides varies considerably, but at 54 months and after many draw the continuous line starting by drawing the left side downward and continuing counterclockwise (p. 59).

When a design is too difficult for a young child to reproduce, he tends to simplify the drawing according to certain principles, Hildreth (1944) found. The tendencies are to substitute something meaningful for a meaningless design; to unify and "close" the design; and to introduce rhythm, symmetry, or conventional proportions when these are lacking. There is a tendency to shorten a rectangle, to "square" anything with angles, to substitute a circle for any design that suggests roundness, to widen angles, and to simplify designs all over by omitting details. "The tendency is," she noted, "toward more primitive and habituated response, resulting in mental economy and least effort."

Subjects of Children's Drawings. Studies of the drawings of young children led Gesell (1928) to conclude that, when they draw spontaneously, it is unusual for them to draw anything bizarre or eccentric.

When McCarty (1924) asked over 30,000 kindergarten and first- and second-grade children to draw anything they wished, the most popular object proved to be the human form, which occurred in 16.5 per cent of the drawings, with the adult form slightly more popular than the child's form. Next in order of popularity were houses, 13.9 per cent, trees,

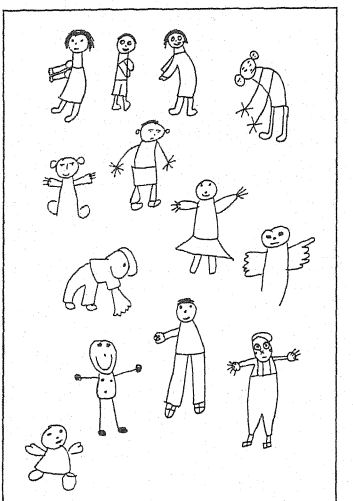

FIG. 62. Typical drawings of a man by first-grade children. (*From M. M. Hughes, and L. Stockdale. The young child and graphic expression. Childhood Education*, 1940, **16**, *p.* 309. *Used by permission.*)

9.3 per cent, and furniture, 8.3 per cent. Animals appeared in only 4.0 per cent of the drawings and design in 0.5 per cent. With increase in age, McCarty found a decrease in drawings of the human form and more interest in drawing buildings and nature in all phases, as animals and flowers. From four or five years on, there was an increase in composition, as compared with the drawing of simple objects, which is characteristic of younger children. Figure 62 shows typical first-grade figures.

Hurlock and Thomson (1934) asked kindergarten and first- and second-grade children, ranging in age from 4½ to 8½ years, to draw

pictures of eight objects, as a man, tree, girl, house, dog, flower, automobile, and boat. They were allowed to use either crayons or pencils. In all, 2,292 drawings were made. Color was always used. The younger children said they liked it, while older children used it because they thought it was appropriate. There was no interest in formal design; this rarely appears until the tenth or twelfth year. There was an increase in the use of background, such as waves surrounding the boat and trees around the house, as well as an increase in number and accuracy of details, with increase in age (refer to Fig. 66, page 392).

Knauber (1931) found that as early as two years of age, there was a *great difference in children's interest and ability in drawing. In the case* of nursery-school children, anything new and interesting, without regard for pattern, interested them most, while in the kindergarten and first, second, and third grades, the children preferred to draw things for which they had learned patterns. They showed a preference for their natural surroundings—people, trees, houses, or flowers—or for those subjects which they had learned by imitation. As children grow older, the subject of their drawing is influenced to a large extent by their environment and recent happenings. This results in marked individual differences in what different children draw.

Meier (1939) maintains that among young children from nursery school through the third grade, two forms of graphic expression appear. The first takes the form of drawing outlines of commonly experienced objects and the other, the form of simple expressions of experience involving more than a single concept, sometimes taking the form of compositions. At this age, children are not interested in naturalistic representation. The child frequently does not draw what he sees but tries to reproduce what he knows about what he sees. This results in distortions, which are common and natural at this age. Furthermore, objects in his drawings which are important to him are likely to be made larger, as when a dog or a man is larger than a house. Objects not ordinarily visible appear through walls or through a person's body, because the child knows they are there.

Among older children, in grades 4 through 8, great individual differences in drawings were noted. The child grows increasingly aware of limitations in his technique, and his interest in art suffers from competition with other activities. There is a marked drop in interest in art at the beginning of junior high school, Meier found. Hesitation and embarrassment in connection with artistic expression are noticeable in late childhood. The child then often turns from drawing and painting to craft activities.

Serbian children who were being cared for in Switzerland were asked by

Baumgarten and Tramer (1943) to draw, first, a human being and then any subject they wished. In their free drawings, there was a high percentage of houses, suggesting the possible effects of homesickness. Sex

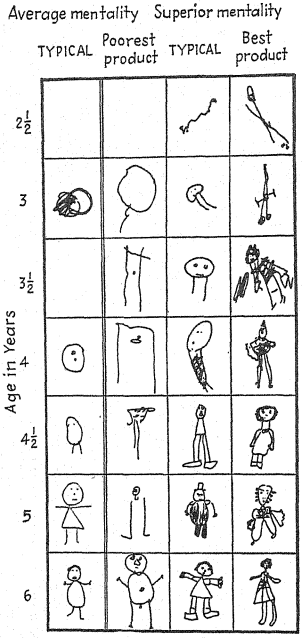

FIG. 63. Drawings of a man by preschool children of average and superior intelligence. (*From L. B. Amers, Free drawing and completion drawing: a comparative study of preschool children. J. genet. Psychol.*, 1945, **66**, *p.* 164. *Used by permission.*)

differences in the choice of subjects were marked. While the boys most often drew airplanes, tanks, and battle scenes, the girls rarely did so. They most often drew churches, flowers, landscapes, and household articles. Up to and including the age of ten years, the girls drew chiefly feminine figures when asked to draw a human being. After that, drawings of men and boys predominated. At all ages, the boys drew a marked preponderance of male figures.

Goodenough (1926) also has reported sex differences in children's drawings. This is seen in the way they represent the human figure. Boys, she found, are better at representing the bodily proportions correctly than are girls, while girls like to try their hand at ornamentation. Besides, the intellectual level of the child influences the quality of his drawings. At every age, bright children are superior in their drawing skills to children of average or below-average intelligence. The influence of intelligence on the drawings of children of preschool age is illustrated in Fig. 63.

Witty (1941, 1941*a*), in a study of the interest that fourth-, fifth-, and sixth-grade children show in comics, reported that approximately 60 per cent of the children found pleasure in making comic strips. This was true of the girls as well as of the boys in his study. The comics that they made showed a variety of subject matter and were of high quality.

Crayoning and Painting. Creative activities involving the use of crayons and paint are popular during childhood and follow much the same pattern of development as drawing. At two years of age, Gesell (1940) found, experimentation was largely motor and manipulative; by three, the child can control the use of artistic media; at four, imagination enters into the child's activities; and by five, he begins to be self-conscious about his work. The following pattern of development in crayoning has been noted by Gesell (1928):

THE GENETIC SEQUENCE OF CRAYON AND PAPER BEHAVIOR
[Gesell (1928)]

0 to 1 month	Reflex clasp of crayon without visual regard.
1 to 3 months	Increasing complexity in manipulation reactions to crayon, without visual regard.
3 to 5 months	Increasing visual cooperation in manipulation of crayon and paper. Clasps (with two hands) paper favorably presented. Picks up crayon on contact with hand.
6 to 9 months	Reaches for crayon on sight. Brandishes, bangs, and crumples. Does not bring paper and crayon into exploitive relation. Hand to mouth reaction frequently dominates.
9 to 12 months	Gradually brings crayon and paper into productive relation. Makes staccato banging marks; or faint wavering scrawl. Gives fugitive heed to demonstration of scribbling by examiner.
12 to 18 months	Imitative scribble. Transient, fitful exploitation by crayon, with fugitive attention to marks produced. Increase of controlled innervation in bringing crayon to bear upon paper.
18 to 21 months	More defined and spontaneous scribble. Makes a crude imitative stroke. Differentiates between a straight stroke and a circular stroke.
24 to 30 months	Imitates a vertical stroke. Shows prolongation of attention span in crayon activity.
30 to 36 months	Makes two or more marks in imitation of a square cross, but does not make adaptive combination of strokes.

THE GENETIC SEQUENCE OF CRAYON AND PAPER BEHAVIOR (*Continued*)
[Gesell (1928)]

36 to 40 months	Imitates a horizontal stroke. Brings vertical and horizontal strokes into relation in imitation of a cross. Copies a circle from a model.
48 to 60 months	Copies a cross. Copies a square. Draws a recognizable man. Begins to differentiate between square and oblique cross drawn from model.

The use of water-color paints follows shortly after the child uses crayons and is an equally popular form of self-expression. The young child derives keen enjoyment from covering pages of paper with bright colors, selected and combined by him without adult supervision or interference. Finger painting, a glorified form of mud-pie play, in which the paints are the consistency of mud and are put on the paper with the finger or the hand, has recently become popular in childhood.

In a study of the paintings of young children, Beach and Bressler (1944) noted five developmental phases:

1. Relatively uncoordinated scrubbing, sweeping, and spreading color on the page. This is an exploratory phase, in which the child's body movements are random and the results are usually chaotic.
2. Accidentally attained design.
3. Consciously sought design.
4. Representation, such as a horse or a man. This is seen in the paintings of six- and seven-year-olds.
5. Full realization of representation and design, in which there is a more highly developed communication of feeling and idea. Perspective is used but the work need not be realistic.

Music. Regardless of whether or not they have musical talent, little children like to sing. The baby first engages in this form of self-expression when he introduces rhythm into his babbling. It gives him keen enjoyment to listen to the singing of his babbling, and he laughs heartily at himself. According to Jersild (1939), children give a bodily response to music while they are yet in the cradle. Later, they spontaneously walk, hop, and clap to the accompaniment of music. The child's first attempt at singing may even precede his ability to talk. By the age of four or five years, most children can sing simple melodies, can beat good rhythm, and can recognize simple tunes. Even though the child does not know all the words of a song, he will supplement with words of his own.

Producing music, whether by striking keys of a musical instrument, winding a music box, or turning on a victrola or radio, is very popular with young children. While they enjoy listening to music produced by others, the enjoyment that they derive from their own music, even

though it be of a vastly inferior caliber, is far greater. They enjoy rhythms and dancing, which is often little more than walking to music. Because music in all forms in which the child may take part is such a pleasing, as well as wholesome, form of self-expression, it is strongly encouraged by parents, nursery schools, and kindergartens.

Singing is the most frequently used form of musical expression, because to use it does not require technical training, as is true of the playing of all forms of musical instruments. The types of songs children like has been studied by the Boyntons (1938), in the case of nearly 9,000 boys and girls, of grades 1 to 6. At every age, the songs they like depend upon their major interests at the time. In Table XLIII are given the percentages of songs liked at different ages by both boys and girls.

The percentages given in this table show that school songs are the most popular in the first four grades. Interest in this type of song begins to decline in the fourth grade and drops consistently after that. As the child grows older, there is an increased interest in classical, folk, and patriotic songs. There is less interest also in religious and holiday songs with age, and increased interest in popular and dance music.

Study of specific songs preferred in these classifications showed that children prefer songs of easily perceived tonal values and slow cadence. This is because such songs are "singable" and can thus be enjoyed by all, whether or not they have musical ability. Also, these songs can be learned without too much effort and thus are not regarded as part of a singing lesson. Slow singing was found to be popular because it is relaxing and restful.

Unfortunately, like drawing, music as a form of self-expression is too often abandoned late in childhood. The critical attitude of music teachers causes the child to become self-conscious about his ability. Even his playmates sometimes make fun of his attempts to sing, with the result that the child limits the use of this form of self-expression to times and places where he can feel safe from criticism or ridicule. The fact that most adults enjoy active participation in singing or playing musical instruments, when they are alone or in a crowd where they believe they can participate without calling attention to themselves, shows that this form of self-expression is rarely abandoned but is modified to meet social requirements.

Writing. Creative play in the form of writing stories or poetry is commonly found in adolescence. But among children in general, writing is looked upon more as a school lesson than as a form of play. Only after having mastered writing and spelling to such a degree that both can be carried out without too much effort and aid from others, does the child use them in creating stories or poems.

TABLE XLIII. TYPES OF SONGS PREFERRED BY 4,473 BOYS AND 4,423 GIRLS OF DESIGNATED GRADE PLACEMENT

Type of music	Sex	Grade					
		1	2	3	4	5	6
School songs	Boy	55	57	46	33	18	14
	Girl	56	56	47	31	24	15
Classical	Boy	..	*	*	1	2	2
	Girl	*	*	*	1	3	3
Dance—jazz	Boy	*	1	2	3	2	5
	Girl	*	1	3	6	6	5
Folk songs	Boy	4	5	6	10	16	15
	Girl	3	3	4	7	9	10
Holiday songs	Boy	6	4	4	2	2	1
	Girl	7	6	4	3	2	1
Mountain ballads	Boy	1	2	3	5	8	7
	Girl	*	1	2	4	4	1
Nursery rhyme songs	Boy	5	2	1	*	*	
	Girl	5	2	1	1	*	
Negro spirituals	Boy	*	*	*	1	1	1
	Girl	*	*	*	1	*	
Patriotic	Boy	7	10	12	18	13	17
	Girl	7	8	11	12	12	14
Popular—hot jazz	Boy	8	9	13	13	18	26
	Girl	8	10	14	20	26	37
Religious	Boy	13	9	11	9	5	6
	Girl	12	12	13	11	8	8
Semiclassical	Boy	*	1	2	4	9	7
	Girl	*	*	2	3	7	6

* Mentioned but with a frequency of less than 1 per cent.

Source: BOYNTON, P. L., and BOYNTON, J. C. *Psychology of child development.* Minneapolis: Educational Publishers, 1938, p. 301. Used by permission.

Writing poetry, as a form of play, has been investigated by Lehman and Witty (1928*b*). Only slight sex differences, in favor of the girls, existed, while striking differences between Negro and white children occurred. Negro children were found to write poems much more frequently than white children, and this ratio difference was obtained for all age levels. With increase in age, during adolescence, boys and girls of both races show less interest in writing poetry than was found to exist among younger adolescents.

TOYS

Childhood Is the "Toy Age." From babyhood until adolescence, toys play an important role in the life of the child. At first, the baby uses toys for exploration. He shakes, rattles, pulls, pushes, sucks, and uses whatever other methods he can to discover what the toys are, how they work, and all about them. Several years later, toys are used for play in imitation of adult activities and, still later, for dramatic, make-believe play. As the child approaches adolescence, his play interests shift from toy play to games and sports, with the result that his need for toys passes. He may, however, cling to a favorite toy because of some sentimental attachment for it and use it as a "keepsake" rather than as a plaything.

Toy Preferences. When given complete freedom in the choice of play materials, which type will the child choose? This question has been subjected to experimental analysis in the case of preschool and kindergarten children, during the free-play periods. Parten (1933) observed the favorite play activities to be playing in the sandbox; playing family, house, and with dolls; pulling or hitching a sectional train; and riding a kiddy car. The least favored play activities were looking at an object or a picture, stringing beads, painting, and sitting unoccupied.

Toys preferred by three-year-olds, according to Bridges (1929), are cylinders to be fitted into holes in a wooden block, blocks of wood for playing purposes, and pairs of brilliantly colored pieces of wood to be matched and arranged in rows of pairs. Next in preference came building with cubes and chalking on a blackboard. The five least often selected play materials were the Montessori pink tower, brush and paint for switching, lacing material in a frame, stuffed animals, and a china tea set.

Four-year-olds, according to Hulson (1930*a*), show a definite preference for blocks, which are used primarily for construction, and these constructions are spontaneously named by the children. The predominant type of construction is reproduction of an object from the child's environment, the most favored form of which is a house. Playing with sand, kiddy cars, and seesaws is also popular, while blackboards, dolls, and animals prove to be the least popular play materials. Bridges (1929)

likewise noted a preference for materials suitable for creative play at this age. The most popular play activity for both boys and girls proved to be making simple patterns by tracing around little insets with colored crayons. Next in popularity were the colored cubes used for construction, while the easiest set of wooden cylinders ranked third.

Preferences for play materials among the four- to six-year-olds were listed by Vance and McCall (1934) as given in Table XLIV.

TABLE XLIV. AGE PREFERENCES FOR PLAY MATERIALS

Four-year-olds	Five-year-olds	Six-year-olds
Toy animals	Plastic materials	Plastic materials
Housekeeping materials	Toy animals	Playground apparatus
Large toys for active play	Housekeeping materials	Housekeeping materials
Playground apparatus: plastic materials	Playground apparatus: large toys for active play	Large toys for active play: toy animals
Transportation miniature toys	Transportation miniature toys	Manipulative materials
Manipulative materials	Blocks	Transportation miniature materials
Blocks		Blocks

Source: VANCE, T. F., and MCCALL, L. T. Children's preferences among play materials as determined by the method of paired comparisons of pictures. *Child Develpm.* 1934, **5**, 275. Used by permission.

Note the little interest shown by four-, five-, and six-year-olds in blocks. In every instance, these proved to be the least popular form of play material. There was greater similarity than difference in the interests at different ages.

"Do-with" Toys. Instead of toys which are complete and perfect, as viewed by the adult, the child needs toys that can be *moved, changed,* and *manipulated,* according to the desire of the child. When too automatic or too complete, the toy leaves nothing for the child. Or, if the toy does just one thing, as for example, in the case of a mechanical duck that walks when wound up, the child loses interest in it as soon as the novelty wears off. Noise makers, as squeakers or rattles, give an element of variety to a toy and thus add to its attractiveness for a child. The kitchen cabinet provides ideal "do-with" toys for the young child, as Fig. 64 shows.

Time Spent on Toys. How long a child will spend playing with toys, or with one specific toy, depends partly upon the child and partly upon the toy itself. In Bott's (1928) study of toys, mechanical toys were found to occupy the longest play periods on the part of preschool children. In Table XLV are given the percentages of time spent on each of four types of play material: raw materials, locomotor toys, pattern toys, and mechanical toys.

FIG. 64. Ideal "do-with" toys for the young child. (*From Parents' Magazine, October, 1939. Photograph by Bob Lavitt. Used by permission.*)

These figures show that raw materials rank highest in time spent for the two younger groups and second in popularity for the oldest group. Mechanical toys, on the other hand, occupied the least time for all three groups.

Decline in Toy Play. The peak of toy play is reached in most cases between the ages of six and eight years. From then on, less and less time is spent in toy play. The explanation of this is twofold. In the first

TABLE XLV. TIME SPENT WITH PLAY MATERIALS

Type	Two-to-three-year-olds, percentage of time	Three-to-four-year-olds, percentage of time	Over four years, percentage of time
Raw materials	29.0	37.4	42.4
Locomotor	25.3	31.3	27.9
Pattern	23.2	19.4	23.9
Mechanical	22.5	11.9	5.8

Source: BOTT, H. Observation of play-activities in a nursery school. *Genet. Psychol. Monogr.*, 1928, **4**, 75. Used by permission.

place, the child's play interest changes, and he begins to substitute games, sports, reading, and other more mature types of play for those formerly engaged in. These new types of play do not necessitate toys. Secondly, relatively few toys are complex enough in form to enable the child to do much with them. With increase in intelligence, the child needs play materials that will tax his more mature intellectual status.

PLAY IN LATE CHILDHOOD

From the time the child enters school, his play interests begin to change. During the first year or two of school, there is an overlapping of play activities characteristic of early childhood and those characteristic of late childhood and adolescence. The favored play activities of early childhood persist for a few years while, at the same time, new play interests are developing. This leads to a wider range of play activities than occurs at any other time and, for that reason, late childhood is often called "the play age."

Types of Play Activity. The most important play activities in late childhood include: (1) *collecting;* (2) *games and sports;* and (3) *amusements,* in the form of reading, movies, and listening to the radio. Each of these will be discussed separately.

1. Collecting

From the age of three years, there is a desire on the part of every normal child to collect things which interest him temporarily. In *early childhood,* the things collected are usually valueless and trivial. Once they are collected, they are generally forgotten or little attention is given to them. They are put in the child's pockets, or in some special place in the playroom, and then forgotten.

From six years to adolescence, there is a strong tendency on the part of children to make collections. In fact, this is one of the most popular forms of play among boys at that age, though girls, as a rule, collect more things than do boys. Durost (1932) found the largest number of collections for boys at ten years of age, and for girls at eleven. The age at which the peak occurs differed, however, according to the intelligence of the children. In general, the lower the intellectual level the higher the age at the peak of collecting activity. At this time, collections are kept in some place where they will not be disturbed, as attics, cellars, desks, old trunks, jars, or baskets.

Objects Collected. At first, children collect anything that attracts their attention. Later, they become more selective in their choice of objects and collect only a few things which, at the moment, interest them especially. A number of investigations have been made to discover just

what children collect at different ages. These investigations have shown marked similarity in the lists of objects reported in the collections. A representative study of this type was made by Whitley (1929) from information obtained from 4,446 children, ranging in age from seven to eighteen years. In the lists given below (Table XLVI), abbreviated from Whitley, the articles most commonly collected at different ages are given.

TABLE XLVI. OBJECTS COLLECTED BY CHILDREN

Boys	Girls
Seven Years and Under	
Marbles	Funny papers
Coupons	Samples of school work
Old magazines	Paper dolls
Small boxes	Small boxes
Buttons	Rubber bands
Eleven Years	
Coupons	Coupons
Marbles	Letters received
Stamps	Old magazines
Funny papers	Beads
Rubber bands	Samples of school work
Fourteen Years	
Coins	Letters received
Coupons	Photographs
Marbles	Samples of school work
Stamps	Beads
Samples of school work	Pictures
Eighteen Years	
Theater programs	Letters received
Letters received	Old magazines
Photographs	Samples of school work
Badges	Small pictures
Old magazines	Photographs

Source: WHITLEY, M. T. Children's interest in collecting. *J. educ. Psychol.*, 1929, **20**. Condensed from table on pp. 253–254. Used by permission.

In Fig. 65 are shown graphically the favorite collections of children.

2. GAMES AND SPORTS

Games of Babyhood. Simple games, generally referred to as "mother games" because they are more often played with the mother than with any other person, begin to make their appeal during the second half of the first year. Finger play, pat-a-cake, peekaboo, hide-and-seek (behind furniture, a piece of cloth, or merely a hand), pigs-to-market, mirror play, and similar games, passed down from one generation of babies to another, seem to have a universal appeal. By the time the baby can walk, he gets keen enjoyment from hiding from others to see if they can find him.

Games of Early Childhood. In early childhood, around the fourth or fifth year, the child becomes interested in the *neighborhood games*, played with other children in the neighborhood. These are of the *undefined-group* type, in which any number of children can take part. One child may organize the game and get the others to play with him, or the game may be organized by an older child or an adult. In these games, the

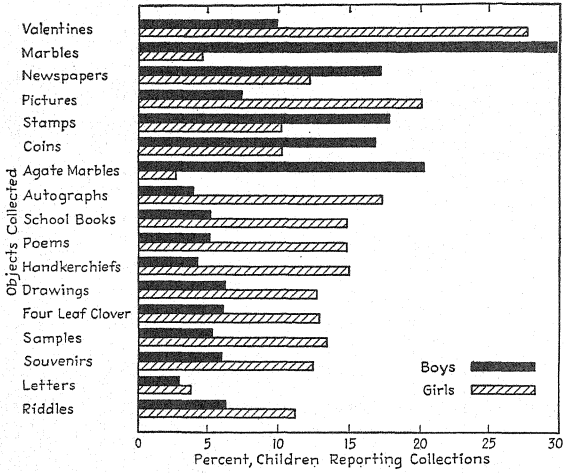

FIG. 65. Objects most frequently collected by children age nine to sixteen. (*Based on data of Frank Boone as reported by P. A. Witty and H. C. Lehman, Further studies of children's interest in collecting. J. educ. Psychol.*, 1930, **21**. *From F. K. Shuttleworth, The adolescent period. Monogr. Soc. Res. Child Develpm.*, 1938, **3**, *No.* 3. *Used by permission.*)

children copy one another and follow definite orders from the leader. Typical games of this sort are the ring games, cat and mouse, going to Jerusalem, puss in the corner, blindman's buff, advancing statues, hide-and-seek, and cops and robbers.

By the age of five, the child plays games to test his skills, such as walking on street curbs, walking on a crack in the pavement, jumping down steps, hopping on one foot, skipping, jumping rope, bouncing balls, or playing jacks. These are of a lower social organization than *neighborhood games* because they are individual rather than group and because their competitive element is of relatively little importance.

Games of Late Childhood. By the age of ten or eleven years, games become largely competitive in spirit. Solitary play is abandoned, and the typical neighborhood games which reigned in favor earlier give way to *team*, *pair*, or *double-pair games*. Interest is now concentrated on skill and excellence. At first, the play is largely individual, with little cooperation with the other players. The child is not a good team player at first because he wants to dominate the play instead of limiting his efforts to his own role. Gradually, however, he learns to cooperate with the other players and, as a result, has more enjoyment. By the time he reaches adolescence, the typical child is a good team player, in that he can cooperate with the other players and adhere strictly to rules.

TABLE XLVII. PLAY INTERESTS BEFORE, DURING, AND AFTER PUBERTY

Play activity	Age, groups, years				
	12	13	14	15	16
Cops and thieves	100	108	61	22	15
Run, sheep, run	100	113	74	38	6
Follow the leader	100	91	54	44	15
Tag	100	87	57	52	18
With marbles	100	91	59	36	19
With electric trains	100	77	53	23	6
Spin tops	100	72	37	23	14
Fly kites	100	83	43	27	14
With meccanos	100	100	63	40	19
Walk on stilts	100	80	62	47	17
With bows and arrows	100	84	49	31	13

Source: FURFEY, P. H. Pubescence and play behavior. *Amer. J. Psychol.*, 1929, **41**, 109. Used by permission.

In a study of a troop of Boy Scouts and a pack of Wolf Cubs, Furfey (1926) found that few boys below the age of eight were interested in joining the cubs, while after fourteen, there was a marked falling off in club membership, caused by loss of interest in play of this sort. He (1929) traced the decline of interest in "gang-age" games which takes place at puberty and found a marked falling off after thirteen years of age when, in the average boy, puberty changes make their appearance. This decline is well illustrated in the accompanying table, in which are given the percentages of boys who showed an interest in playing different games before, during, and after puberty.

A study of this table will reveal that while all the boys at twelve years of age, and nearly all at thirteen years, showed an interest in "gang-age" games, there was a marked decline of interest after that. By the time

the boys were sixteen years old, very few showed an interest in games of this type.

3. Amusements

"Amusement" is the name applied to that form of play in which the individual is a passive participant and derives enjoyment as a spectator, from observing the activities of others. This type of play is especially well suited to times of the day when the child is tired out from active play or to those children whose everyday routine requires so great an expenditure of energy that they are too tired to play actively during their leisure time. As the child grows older and has more responsibilities, amusements occupy more and more of his leisure time.

Since reading, the movies, and radio are the three most popular forms of amusement, they will be discussed in detail in the following sections as examples of this type of play.

Reading. From early in the first year, little babies like to be sung to. They enjoy the rhythmic sounds of lullabies and nursery rhymes, sung or recited in a singsong voice. Around the age of two, they like to look at picture books containing large pictures of people, animals, and familiar household objects printed in bright colors. While looking at the pictures, they enjoy being told simple stories about them.

Early Reading Interests. Storybooks which have been read to the child so often that he knows them almost by heart and picture books appeal mostly during the childhood years. As many of the desires of the child center around food, stories dealing with fairy-tale land where houses are made of gingerbread and peppermint sticks naturally have a great appeal. The Mother Goose jingles are loved by all children because of their easy swing. Next in popularity are the simple fairy and nature stories. Because of the child's belief in animism, stories which deal with animals that behave like human beings are very popular.

Wilson (1943) asked kindergarten and first-grade children to tell individually what stories they liked very much. The most popular stories mentioned were children's classics, such as *The Three Bears, Mother Goose, Little Red Ridinghood,* and *Cinderella.* Among the modern stories that were popular were *Little Black Sambo, Alice in Wonderland,* and the stories about the Bobbsey Twins.

When the children were asked why they liked these stories, Wilson (1943*a*) reported that the most common reasons given by both boys and girls were "adventure," "interesting," and "true." The favorite characters were, in order of preference, animals, boys, and men, among the boys; and animals, girls, and boys, among the girls. Women, fairies, and babies were decidedly not the most popular. The reasons the chil-

dren gave for their choices were that they liked the characters for their personal qualities or because they were funny.

Children in kindergarten and in the first three grades prefer stories about animals, Witty, Coomer, and McBean (1946) found. Whether the animals be wild or tame, real or fanciful, they stir the feelings and imaginations of boys and girls. Following animal stories came fairy tales and stories of real children, such as the Bobbsey Twin series. Children at this age, it was noted, like humour in narration and in illustration.

Reading Interests of Late Childhood. The enjoyment the older child derives from reading is for the most part due to the satisfaction of the spirit of adventure, so strong at that age. As the child is carried into an imaginary world created for him by the book, he imagines himself doing the things he would like to do but which, in everyday life, he may not be able to do. At the age of six and seven years, the main interest in reading lies in stories about nature, the wind, birds, trees, and flowers. There is a beginning of interest in fairy tales, but these must be short, simple, and for the most part in dialogue form. Any book for this age must contain more pictures than reading matter.

The most favored reading for the eight-year-old child is fairy tales. The fantastic, imaginative element of these stories appeals to the child at this age. Rather closely related to the interest in fairy stories is the interest in stories of other lands, especially when they center around children. By the age of nine, interest in fairy tales begins to lag, owing to the fact that training in schools makes it increasingly difficult for the child to believe in fairy-tale elements. This is especially true of boys, whose reading interests at nine shift to stories of boy life, mainly of the Boy Scout type.

Toward the end of childhood, there is generally a rage for reading, which places reading high among the most favored play activities. This is especially true of girls. It is quite usual for boys and girls to read one or two books for pleasure every month.

Terman and Lima (1927) found that the eleven-year-old is interested mainly in tales of adventure and mystery. Science and invention are popular reading topics for boys, while home and school life are topics more popular with girls. Girls retain an interest in fairy and animal stories, but boys at this age have entirely outgrown their interest in this type of book. At the age of twelve years, the climax of the "reading craze" is reached, an age which coincides with the beginning of pre-adolescence, when boys and girls are beginning to show a desire for isolation.

Because of the beginning of a hero-worship tendency, books of legend-

ary or historical heroes, as well as biographies of great men and women, thrill the twelve-year old. Books about invention, athletics, and adventure are very popular with boys, while girls show a preference for books relating to home, boarding-school or college life, adventure, stories written for boys, nature stories, and Bible stories. At the age of thirteen, these reading interests become intensified, but few new reading interests develop.

Children in the intermediate grades—grades 4 through 6—Witty, Coomer, and McBean (1946) found, turn to adventure books, such as *Robin Hood* and *Robinson Crusoe;* animal stories, such as *Donald Duck, Lassie Come Home,* and *Black Beauty;* humorous stories, like *Mary Poppins;* books about real children, such as *Tom Sawyer* and *Huckleberry Finn;* and stories about children of other lands, like *Heidi* and *Snow Treasure.* Seventh and eighth graders have more mature tastes; they prefer books of action and adventure.

Poetry. Children, as a rule, are not deeply interested in poetry. Chase (1928) reported little interest on the part of those in the fourth, fifth, and sixth grades. Terman and Lima (1927) found that poetry is enjoyed by young children but that, by the age of twelve years, only 10 per cent of the girls and 5 per cent of the boys questioned said that they read poetry. In the group studied by Lazar (1937), poetry was mentioned by 33 per cent of the girls and by 6 per cent of the boys. Only one boy said that he liked poetry best of all kinds of reading, while 25 girls claimed that poetry was their favorite type of reading.

Individual Differences. While there are fairly well-marked age differences in reading preferences, within each age group are differences even greater than one finds from one age to another. These differences depend more upon the sex and intelligence of the readers than upon any other factors.

Marked sex differences between the reading interests of boys and girls in grades 6, 7, and 8 have been reported by Thorndike and Henry (1940). The material that appeals especially to the boys has a suggestion of violence or adventure—boys' outdoor adventures, mystery and detective stories, sports, travel, science, and war. Few of these subjects offer a strong appeal to girls, who prefer stories of real life with everyday characters and a flavor of romance. They also like biographical material relating to women and stories about self-improvement

How the intellectual level of the child influences his reading interests has likewise been studied by Thorndike and Henry (1940) in the case of slow-learning (mean I.Q., 88) and rapid-learning (mean I.Q., 128) children. The reading choices of slow-learning children, they found, include material relating to useful feminine activities, hobbies, science and

invention, biography and biographical adventure, self-improvement, money-making, and practical themes.

Fast-learning children showed special interest in adventure stories and stories of war. Furthermore, fast learners read almost twice as much as slow learners, and their reading covered a wider range of topics. Thorndike and Henry concluded their study with the statement that "although fast- and slow-learning groups in the upper elementary grades may have much the same topical interest patterns, educators must expect the reading through which these interests are satisfied to differ markedly both in amount and in medium of expression."

Magazines and Newspapers. Reading magazines and newspapers becomes a popular form of reading interest above the fifth grade. Johnson (1932), in a study of nearly 2,000 pupils, found that more time was spent in reading magazines and newspapers than in reading books. Boys showed a preference for newspapers and girls for magazines.

Brown (1939) found that only 12.3 per cent of the fifth-grade children he questioned reported that they read magazines regularly. The percentage, however, increased to 74.9 in the twelfth grade. Interest in the material in magazines, he found, parallels that in books, in radio, and in the movies.

Lazar (1937) noted that the "better" types of magazines are found in the homes of bright children, as compared with the dull. This is also true for children's magazines. Boys, he found, read magazines more than do girls. Boys, as a rule, prefer detective and mystery stories, while girls show a preference for the general story types.

In Table XLVIII are shown the five kinds of magazines liked best by boys and girls of different intellectual levels.

Lazar noted that the newspapers most frequently read by the dull children he questioned were the tabloids. Bright children, by contrast, read the "better" type of papers. No newspaper reading was reported by children with the lowest I.Q. scores. While girls showed a wider range of reading interests than boys, the comic sections proved to be the most popular with children of both sexes. In Table XLIX are shown the three sections of the newspapers best liked by boys and girls of different levels of intelligence.

Comics. Comics are cartoon stories in which the story element is less important than the pictures. Relatively few of the comics published today are humorous. Most of them relate to adventure rather than to comedy. They may appear in newspapers in the form of "comic strips" or in magazine form, "comic books." Both forms are popular not only among children but among adolescents and adults, as well.

One of the earliest studies of children's interests in looking at the

TABLE XLVIII. FIVE KINDS OF MAGAZINES LIKED BEST BY BRIGHT, AVERAGE, AND DULL CHILDREN

Bright	Per cent	Average	Per cent	Dull	Per cent
		Boys			
Science and mechanics	37.3	Detective and mystery	29.0	Detective and mystery	28.4
Detective and mystery	30.1	Science and mechanics	23.2	Science and mechanics	7.7
Children's	19.1	Children's	11.1	General story	7.7
Adventure	18.8	General story	8.4	Adventure	6.7
General story	11.8	Adventure	8.2	Children's	5.1
		Girls			
Children's	39.5	Movie and theater	22.5	General story	20.2
Movie and theater	19.9	General story	20.7	Movie and theater	12.8
General story	18.9	Detective and mystery	14.8	Detective and mystery	8.7
Science and mechanics	14.1	Serious-popular	10.4	Serious-popular	6.4
Literary	10.3	Household	9.8	Household	5.4

Source: LAZAR, M. *Reading interests, activities, and opportunities of bright, average, and dull children.* New York: Bureau of Publications, Teachers College, Columbia University, 1937, p. 61. Used by permission.

TABLE XLIX. THREE SECTIONS OF NEWSPAPERS LIKED BY BRIGHT, AVERAGE, AND DULL CHILDREN

Bright	Per cent	Average	Per cent	Dull	Per cent
		Boys			
Comics	73.0	Comics	82.2	Comics	85.8
Sports	37.1	Sports	21.6	Sports	6.6
News	12.8	Crimes	4.1	Stories	5.6
		Girls			
Comics	87.0	Comics	91.7	Comics	88.2
News	13.7	News	5.6	News	4.4
Crossword puzzles	8.4	Crossword puzzles	5.3	Crossword puzzles	3.0

Source: LAZAR, M. *Reading interests, activities, and opportunities of bright, average, and dull children.* New York: Bureau of Publications, Teachers College, Columbia University, 1937, p. 66. Used by permission.

Sunday funny papers was made by Lehman and Witty (1927*d*), who reported that this was the play activity most frequently engaged in by eight- to fifteen-year-olds. Though this interest began to wane to a certain extent during adolescence, Lehman and Witty found, the comic section remained popular even after new reading interests had appeared. Since the time that this study was made, interest in the comics has grown. There are many more comic strips in our daily and Sunday papers now than there were in the 1920's. Furthermore, the stores are flooded with comic books of every conceivable type, which children can buy for less than they have to pay for other magazines. The child of today is thus literally surrounded by comics.

According to Witty (1941, 1941*a*) the mean number of comic books read by boys every week when they are in grades 4 through 6 is 14.47. The mean number read by girls was found to be 11.49; and by both sexes, 12.94. The average number of comic strips read by the children was 24.48. Of these, 13 were read regularly and four or five more of them, "often."

Interest in comic strips, Wilson (1941) reported, is greater among second-graders than among kindergarten children. Nearly all the children said they used newspapers for the comic strips. As a group, they were able to name 73 different characters. Among rapid- and slow-learning children, according to Thorndike and Henry (1940), reading of comics made up 23 of the 560 items reported by the rapid learners, as contrasted with 100 of the 282 items reported by the slow learners.

Among Negro children, Witty and Moore (1945) found, reading the comics was more popular than among the whites. This, they explained, may be attributed to the somewhat more restricted reading opportunities of the Negro pupils; to the more limited number of good, interesting books in the average Negro home; and to the inadequate funds to purchase many desirable books.

Favorite Comics. As in the case of books, so among the comics, too, children have their favorites. Witty, Smith, and Coomer (1942) asked children in grades 4, 5, and 6 to name their favorite comic strips. The findings are summarized in Table L.

Strang (1943) found age differences in children's choice of comics. Boys of six to nine years of age prefer heroes like Superman, Dick Tracy, and Joe Palooka. They like excitement and adventure, with little concern for realism. Girls of this age like comics featuring pretty women, children, and animals, such as Winnie Winkle, Blondie, Little Orphan Annie, the Katzenjammer Kids, Skippy, and Peter Rabbit.

Among the ten- to thirteen-year-olds, the boys showed an increased interest in hero worship and mystery strips, such as Superman, Terry

and the Pirates, Flash Gordon, and the Phantom. While girls of this age continue, Strang reported, to read their former favorites, they begin to show an interest in comics relating to the opposite sex.

REASONS FOR INTEREST. Not all children read the comics for the same reasons. There are, however, certain reasons for the widespread interest that children show in comics and these interests are pretty universally found among children of the same age levels. The value of the comics, according to Bender (1944), like that of the folklore of other

TABLE L. FAVORITE COMIC STRIPS AMONG CHILDREN IN GRADES 4, 5, AND 6

Name of comic strip	Rank			
	All grades	Grade 4	Grade 5	Grade 6
Blondie	1.0	1.0	2.5	1.0
Dick Tracy	2.0	13.0	1.0	2.0
Smiling Jack	3.0	2.0	2.5	5.0
Donald Duck	5.0	3.0	13.5	5.0
Mickey Mouse	6.0	13.0	5.0	5.0
Brenda Starr	7.0	7.5	13.5	13.0
Henry	11.0	5.0	13.5	
Toots and Casper	11.0	....	13.5	8.5
Dixie Dugan	11.0	13.0	13.5	13.0
Captain and the Kids	11.0	....	8.0	13.0
Winnie Winkle	11.0	....	4.0	
Terry and the Pirates	11.0	....	8.0	8.5
Scarlet O'Neil	11.0	13.0	8.0	

Source: WITTY, P., SMITH, E., and COOMER, A. Reading the comics in grades VII and VIII. *J. educ. Psychol.*, 1942, **33**, 179. Used by permission.

times, is that they "serve as a means to stimulate the child's fantasy life and so help him solve the individual and sociological problems inherent in his living." Should comics be reduced to the real, Bender further commented, this would tend to make them "more threatening and productive of anxiety, because they offer no solution to the problem of aggression in the world."

Bender and Lourie (1941) maintain that comic-book material frequently fits the problems of the individual child. Through identification with characters in the comics, the child has an excellent opportunity for the solution of many of his emotional and personal problems. Thus, they maintain, the comics supply a real need for the child. According to Reynolds (1942), children from the fourth to the seventh grade read comics because they contain sport stories; because they are easy to read, cheap, amusing, exciting; and because their art satisfies the child.

Reports by children of grades 4 to 6, studied by Hill and Trent (1940), showed what comics they liked best and why. According to them, the children liked the comic strips because they are exciting, mysterious, and thrilling, full of action and fighting; because they tell interesting stories and present characters that have bravery, strength, beauty, and unfailing ability to master difficulties. Humor was given in only 17 per cent of the explanations as a reason for liking comic strips. In the case of girls, the element of romance and family life appealed. Comic strips, thus, like the reading of books, satisfy the child's longing for adventure.

When Strang (1943) asked children in grades 1 to 12 why they liked the comics, some of the reasons given were these: the story element with its adventure, suspense, and play; escape from reality, a means of helping the reader to forget; realistic comics similar to one's own hobbies or experiences; interest in the characters themselves; serial nature of the comics, which gives the reader something to look forward to each day; the humor of the comics; a form of relaxation; pictures that tell the story, especially desirable in the case of poor readers; habit; inexpensiveness; and moral value.

The reasons for lack of interest in the comics, Strang found, were few. Among the reasons given, mentioned mostly by good readers, were these: preference for books; comics aren't real; pictures aren't as pretty as those in books; and comics considered "kid stuff," especially as the readers grow older.

Vocabulary of Comics. One of the most common objections raised by educators and parents to the child's reading of comics is that the reader learns many undesirable words through this medium. To find out just how much slang actually is used in the comics that children prefer, Hill (1943) analyzed over a period of 4 weeks the 16 comics ranked highest in popularity by a group of children. In these comics, only 1 per cent of all words used were slang. There was, however, a slight tendency for the children to prefer those comics employing the greater amount of slang and other distortions.

R. L. Thorndike (1941), in a vocabulary analysis of four complete comic books (*Superman*, *Batman*, *Action Comics*, and *Detective Comics*), found that the bulk of the vocabulary was standard English. Twelve per cent of the words were "respectable" slang ("brainstorm," "buddy," "adios") and 10 per cent, "vulgar" slang ("awk," "betcha," "conk"). Furthermore, Thorndike reported, most of the standard words were at about the level of difficulty appropriate for the upper elementary-school or even junior-high-school child.

Evaluation of Comics. There is no question about the fact that the widespread popularity of the comics will guarantee that they will be an

important part of the child's reading for many years to come. It is impossible to keep a child from reading comics, once he goes to school and associates with other children. Nor should any attempt be made to prevent it. Like everything else, comics have their good and their bad features.

An excellent evaluation of the comics has been made by Strang (1943), who has given arguments for and against the comics. The arguments in favor of the comics she lists as follows:

1. The comics constitute a kind of modern folklore corresponding to the Greek and the Norse myths.
2. They meet children's needs for overcoming, in imagination, some of the limitations of their age and ability and for obtaining a sense of adventure denied them in real life.
3. To normal children the comics offer the mental catharsis which Aristotle claimed for the drama. Thus the readers are released from feelings of inadequacy and insecurity and from fear of aggression toward or from others. . . .
4. The comics supply to children of limited reading ability a form of reading experience which is thoroughly enjoyable to them.
5. If the children actually read the text of the comics, they will profit by extensive supplementary reading and will be introduced to a wide range of vocabulary, including many words which they repeatedly encounter in other reading. (Pp. 336–337.)

The arguments against reading the comics given by Strang are these:

1. The comics tend to crowd out reading of a more desirable type.
2. Many poor readers merely get the story from the pictures without making an effort to read the text.
3. The adventures portrayed in the comics are so far removed from reality that children do not acquire an understanding of the world as it is, such as they can obtain from their reading of material that is closer to real life.
4. There is little or no progression of reading experience within the area of the comics.
5. The art of most of the comic strips is of inferior quality. (P. 337.)

Movies. Attending moving pictures, theaters, and concerts is a popular form of play during childhood. In communities where amusements of this type are limited to moving pictures, nearly every child attends moving-picture shows occasionally, some as often as once a week. According to Lehman and Witty (1927*d*), at the ages of eight and nine years nearly one-half of the town children they questioned attended movies; while at the age of twelve years, two-thirds of the town girls did so.

Movie Preferences. Movie interest parallels reading interest, except that comedy plays a greater role in movies than in reading. Miller (1930) found the motive for attending movies is "thrill." Anything that involves adventure, mystery, or romance offers a "thrill" which

everyday life does not give. He listed as follows the movie preferences for kindergarten, first- and second-grade children: animated cartoons (by far the most popular), shorts, travelogues, and feature pictures.

Seagoe's (1931) study of children from grades 1 to 8 revealed that 53.3 per cent of the children preferred going to the movies to reading a book or playing a game. The preferences for different types of movies for children of different ages were found to be as follows:

Ages Six to Nine Years. Comedies and cartoons are the favorites. They like to see children and animals as actors. They want the heroes to be active and the heroines pretty.

Ten to Twelve Years. At this age, boys and girls want adventure films, and they are now less fond of comedy.

As is true of play of all types, sex differences in movie preference begin in childhood and persist throughout adolescence. These differences parallel the sex differences shown in reading interests. Boys, on the whole, prefer more thrill and excitement than do girls, whose preference is for romance.

Influence of Movies. The influence of movies on both children and adolescents is great. In the case of children, movies have a pronounced emotional effect in that they often frighten the child, thus causing nightmares or daytime fears that are difficult for the adult to understand unless he knows the circumstances that have given rise to them. Overexcitement and nervous tension, which so commonly follow moving-picture attendance, lead to sleeplessness and irritability. Many children suffer from eyestrain and general fatigue as a result of attending movies in the late afternoon or evening following a busy day in school or at play.

To measure the influence of movies on children's attitudes, Thurstone (1931) showed school children two films, *The street of chance*, which described the life of a gambler, and *Hide out*, which dealt with prohibition. He measured the effect these pictures had on the children's attitudes by having them check questionnaires before and after seeing the pictures. He found that the film *Hide out* did not have any measurable effect on their attitudes toward bootlegging or prohibition, while the film *The street of chance* made the children more severe in their judgment of gambling than they were before seeing the film. Using a similar technique, Peterson and Thurstone (1932) studied the effect that the film *Four sons* had on children's attitudes toward Germans and war. They found a shift in attitude toward Germans which made the children more friendly toward them, as well as a slight shift toward pacifism. They concluded that the "social attitudes of children are affected in a measurable way by motion-picture films."

Movies offer children an opportunity to impersonate in their play the characters they have seen and admired on the screen. Of 200 boys under twelve years of age questioned by Blumer (1933), 75 per cent said they played at things seen in the movies, and 60 per cent of the twelve- to fourteen-year-olds did so. Common themes in their play required their taking the role of the gangster, the policeman, the cowboy, or the robber. Regardless of social status, combat and mystery themes held great fascination for them.

Radio. A relatively new source of amusement for children is the radio. In fact, today the radio is one of the most popular, if not indeed the most popular, form of indoor amusement. Because the radio has come within the price range of almost every American, there are relatively few children, especially in urban districts, who cannot enjoy this form of amusement, either in their own homes or in the homes of their friends.

Studies of time spent in listening to the radio show that children spend from 1 to 3 hours daily in voluntary listening. This, for the average child, is more than the time given to leisure reading or attendance at movies. Clark (1940) reports that the average time spent per week on radio listening for all the children he studied was 15 hours, 39 minutes.

Children with I.Q.s above 130, he found, do the least radio listening. No sex differences were apparent. Rural children listen more than do urban children (18 hours 30 minutes average for rural, as compared with 12 hours 48 minutes for urban). "Problem" children listen more than "nonproblem" (15 hours vs. 12 hours 48 minutes), and nine- to twelve-year-olds less than twelve- to fifteen-year-olds.

Program Preferences. Until 1929, the only radio programs for children were bedtime stories. Since that time, however, programs designed primarily for children have become so numerous that, at almost every hour of the day when children are free to listen to the radio, there are several programs that appeal to children of different ages, from which they may choose those that appeal to them. Several investigations have been made to determine what types of programs are favored by children. Two of these will serve to illustrate the findings. One relates to a large group of children in the metropolitan area of New York City; the other, to children from Washington, D.C., and Fairfax County, Va.

Eisenberg (1936) studied the program preferences of nearly 4,000 children in New York City, by means of questionnaires answered by the children and their parents, personal interviews, and compositions written by the children themselves. In Table LI are given the number and percentage of boys and girls who said they would like to hear programs of different types.

TABLE LI. TYPES OF PROGRAM CHILDREN WOULD LIKE TO HEAR ON THE RADIO

Type of program	Number of boys reporting	Percentage	Number of girls reporting	Percentage	Total number of children reporting	Percentage
Dramatizations:						
Plays	458	23	267	14	725	19
Mystery stories	202	10	213	12	415	11
Adventure stories	198	10	115	6	313	8
Exciting stories	124	6	80	4	204	5
Cowboy stories	110	6	2	...	112	3
Detective stories	39	2	16	1	55	1
Ghost stories	31	2	20	1	51	1
Murder and gangster stories	25	1	9	...	34	1
Tragic stories	7	...	17	1	24	1
Love stories	2	...	21	1	23	1
Serial stories	12	1	10	1	22	1
Sea stories	21	1	...	...	21	1
Children's programs	4	...	15	1	19	1
Criminal and prison stories	16	1	2	...	18	
War stories	13	1	1	...	14	
Fairy tales	1	...	12	1	13	
Children's stories	4	...	7	...	11	
Music and songs:						
Music (general)	131	7	261	14	392	10
Songs and singing	95	5	217	12	312	8
Orchestra music	21	1	46	2	67	2
Jazz music	21	1	30	2	51	1
Dance music	4	...	47	3	51	1
Operas	3	...	17	1	20	1
Concerts	1	...	17	1	18	
Classical music	2	...	16	1	18	
Band music	9	...	5	...	14	
Piano recitals	2	...	9	...	11	
Humor:						
Jokes	116	6	115	6	231	6
Comedians	102	5	79	4	181	5
Funny programs	91	5	86	5	177	5
Funny stories	8	...	21	1	29	1
Information:						
Current events	26	1	38	2	64	2
History	30	1	15	1	45	1
Addresses	8	...	15	1	23	1
Miscellaneous:						
Sports	32	2	2	...	34	1
Wrestling and fights	21	1	2	...	23	1
Games	10	1	12	1	22	1
Total	2,000	100	1,857	100	3,859	100

Source: EISENBERG, A. L. *Children and radio programs.* New York: Columbia Univ. Press, 1936, p. 93. Used by permission.

The programs that ranked highest in popularity proved to be plays, mystery stories, music (general), adventure stories, songs and singing, and jokes. A surprisingly small number of children said they liked programs of detective, ghost, murder, gangster, tragic, love, funny, and sea stories; jazz, dance, and opera music; information, and sports. The only sex difference worthy of note was in the case of the girls' greater preference for general music, songs and singing, and dance music and the boys' greater preference for plays and adventure stories.

A questionnaire study of the program preferences of urban and rural children, nine to eighteen years old, in Washington, D.C., and Fairfax County, Va., was made by Clark (1940). The percentage of first choice for programs of different types is given in Table LII.

TABLE LII. RELATIVE PREFERENCES FOR PROGRAMS OF EACH TYPE

Program type	Percentage of first choice programs for each program type	
	Boys	Girls
1. Classical and semiclassical music	4	8
2. Religion	0	0
3. Dance, popular and novelty type	15	13
4. Comedy and variety	36	25
5. Detective, crime and mystery programs	13	2
6. Drama: general historical, romantic	14	32
7. Travel and adventure	0	0
8. Children's programs (not otherwise listed)	8	15
9. National, public and civic affairs	0	0
10. News	7	2
11. Sports	1	1
12. Adult programs (including educational, labor, agriculture)	2	2
	100	100

Source: CLARK, W. R. Radio listening habits of children. *J. soc. Psychol.*, 1940, **11**, 135. Used by permission.

The children in this study showed a marked preference for comedy and variety programs and for drama, whether general historical or romantic. This contrasts markedly with Eisenberg's findings in his study of New York City children. Boys and girls showed a difference, not in the amount of time spent in listening to the radio, but in the type of program they preferred. Girls had a broader range of program interests than did the boys. The percentage of preference for drama, classical and semiclassical music, and children's programs was greater

for the girls; for comedy and variety, detective, crime, and mystery programs, greater for the boys. The reasons they gave for disliking certain programs were "lack of interest," "silly," and "childish."

Elementary school children, DeBoer (1939) reported, respond intensely to almost any situation in a radio play which contains action, movement, or conflict. Furthermore, they were found to respond to an extremely wide diversity of types of situation. They responded to programs with familiar incidents from the life of a child as much as to programs dealing with strange, novel, and highly stimulating scenes.

Wilson's (1941) study of the program preferences of kindergarten, first-, and second-grade children showed what characters and types were preferred, such as Uncle Don, Lone Ranger, Musical, Singing Lady, Jack Benny, and Dick Tracy. Children show a marked lack of interest in educational programs, Hockett and Fick (1940) found. Girls, as a rule, have a greater variety of program interests than do boys.

Bad Effects. In spite of the fact that the radio offers children amusement, great emphasis has been placed on the harmful effects, especially to the child's health. The effects are most pronounced when the child listens to horror or mystery plays over the air. Preston (1941) stressed the fact that, when children listen frequently to crimes and horror over the air, nervousness is increased not only in amount but also in degree. Sleep disturbances are likewise increased, and the same is true of fears, especially extreme fears.

Clark (1939) found sleeplessness common among children under twelve who listened to the radio. He reported also that they dreamed about what they heard. Girls were found to dream more than boys, and bright (110 to 129 I.Q.) children dreamed more than did the normal (90 to 109 I.Q.) and the very bright (I.Q.s over 130). Rural children were more disturbed through sleeplessness and dreams about what they heard over the radio than were urban children.

Daydreaming. Daydreaming is a form of amusement which the child enjoys in idle moments or at times when he is bored with the activities he is supposed to engage in. It is also a form of self-expression, because it fulfills repressed or unconscious wishes not fulfilled in the everyday life of the child. It serves, thus, as a compensation for what is missing in the child's life. The dreamer is invariably the central figure of the daydream and derives pleasure from being important. Whether the dreamer be a "conquering hero" or a "suffering hero," who sees himself first as a martyr and then a hero, makes little difference. In either case, he is the central figure and this gives him pronounced satisfaction.

Theme of Daydreams. Green (1923), from the analysis of the accounts of hundreds of daydreams of children in elementary and secondary

schools, came to the conclusion that, while daydreams differed in material details, the main theme of the daydream is the successful display of the dreamer before an applauding audience. He classified daydreams into four major groups, in each of which the dreamer plays the role of a conquering hero. His classification is as follows:

1. *The fantasy of display* in which the dreamer, in a capacity at variance with the facts of real life, performs a feat for which he is applauded.
2. *The saving fantasy* in which the dreamer saves the life of another by an act of which he is, in reality, incapable and gains the devotion of the rescued person, generally a member of the opposite sex.
3. *The fantasy of grandeur* in which the dreamer occupies an exalted role, such as that of a royal person or a deity.
4. *The fantasy of homage* in which the dreamer gains the love of an admired person, usually a superior, by doing a service for that person.

Daydreams of Childhood. Daydreaming begins early in childhood, around the third year, and becomes an increasingly pleasant form of self-expression with each succeeding year. It reaches its peak early in adolescence and, under normal conditions, begins to decline after that. During the childhood years, marked age differences appear in the form and content of the daydream. At first, the daydream is influenced by fairy tales, Bühler (1930) found, and later by adventure stories of the Robinson Crusoe type. The reading interests of the child are responsible to a large extent for the characters, setting, and actions of the daydream. When children's readings deal with realistic situations, as is true around the ninth or tenth year, the daydream in turn becomes more realistic.

Smith (1904) found that the typical daydreams of early childhood centered around play, playmates, food usually denied children, as ice cream and candy, and being rich enough to have every desire gratified. From seven to eight years, the dreams are almost entirely of play and good times, with a sprinkling of the fairy-story type of dream. In girls from eight to ten years, nearly all were found to dream of themselves in a fairy-tale world, as a princess living in a palace with unlimited amounts of clothing and jewels. Dreams of this type are less common in boys. Their dreams show their desire for riches, mostly in the form of finding money, discovering gold mines, or inheriting money from newly discovered relatives. From about ten on until adolescence, sports, athletics, travel, and adventure are the main themes of the daydreams of both boys and girls. Jersild, Markey, and Jersild (1933) studied the daydreams of children, five to twelve years of age, by the interview method. Each child was asked to tell the interviewer what he daydreamed about, and the theme of the daydream was then recorded. In Table LIII is

TABLE LIII. PERCENTAGE DISTRIBUTION OF CONTENT OF CHILDREN'S REPORTS WHEN QUESTIONED ABOUT DAYDREAMS

Type of daydream	All children	Age groups, years				Sex groups	
		5 to 6	7 to 8	9 to 10	11 to 12	Boys	Girls
I. Getting, having toys, food, clothes, pets, etc.	7.8	8.9	6.3	11.4	5.2	10.6	4.9
II. Getting, having money, being rich	4.1	1.5	2.3	5.7	6.2	5.4	2.7
III. Improvement in home circumstances	0.9	1.5	1.7	0.6	0.0	0.3	1.5
IV. Amusements, parties, diversions, make-believe play	19.2	28.1	20.0	17.7	13.4	18.6	19.8
V. Travel	2.2	0.0	3.4	1.1	3.6	2.6	1.8
VI. Having a father, brother, etc.	0.9	0.7	1.1	0.0	1.6	0.3	1.5
VII. Imagined achievements and accomplishments	1.7	0.0	1.1	2.3	2.6	2.3	0.6
VIII. Having a profession, being big, independent	6.2	3.0	5.1	4.0	11.3	6.0	6.4
IX. Moral self-improvement	0.3	0.7	0.0	0.6	0.0	0.0	0.6
X. Personal appearance	0.2	0.0	0.0	0.0	0.5	0.0	0.3
XI. Prestige and adventure	7.1	3.0	5.1	7.4	11.3	8.0	6.1
XII. Identification of self with hero or heroine	1.9	0.0	1.7	4.0	1.6	1.7	2.1
XIII. Magical powers and feats	1.6	1.5	3.4	1.1	0.5	0.9	2.4
XIV. Parenthood	1.2	0.7	1.7	0.6	1.6	0.3	2.1
XV. Love and marriage	0.4	0.0	0.0	0.6	1.0	0.3	0.6
XVI. Relief from duties and unpleasantness	1.2	0.7	0.6	1.7	1.6	0.6	1.8
XVII. Benefits for relatives; philanthropic ventures	1.8	0.7	2.9	0.6	2.6	0.6	3.0
XVIII. Heaven and after life	0.4	0.7	0.0	0.6	0.5	0.6	0.3
XIX. About movies seen	2.8	1.5	3.4	2.9	3.1	3.7	1.8
XX. About stories heard and read	4.3	8.9	4.6	2.3	2.6	3.1	5.5
XXI. Make up stories and poems	1.6	1.5	2.3	1.1	1.6	2.0	1.2
XXII. Supernatural situations (apparently not unpleasant)	1.0	0.7	1.1	0.6	1.6	0.9	1.2
XXIII. Make-believe episodes of everyday life	2.9	4.5	3.4	1.1	2.6	1.4	4.3
XXIV. Thoughts about commonplace events, past happenings	11.1	10.4	6.9	13.7	12.9	11.4	10.6
XXV. Failure in school	1.0	0.0	1.1	1.7	1.0	0.9	1.2
XXVI. About being alone, ghosts, robbers, mystery, etc.	3.5	3.7	5.1	4.0	1.6	4.0	3.0
XXVII. Imagined accidents	1.8	2.2	2.9	1.7	0.5	2.0	1.5
XXVIII. Imagined injury or death of parents and others	1.5	2.2	1.1	1.1	1.6	1.1	1.8
XXIX. Imagined deprivation, impoverishment	0.6	0.7	0.6	0.6	0.5	0.6	0.6
XXX. Autistic, auditory and visual images	1.2	0.0	1.7	1.7	1.0	0.6	1.8
XXXI. No response, don't have any, unintelligible	8.0	11.9	9.1	7.4	4.6	9.4	6.4
Number of children questioned	399	99	100	100	100	199	200
Number of items reported	679	135	175	175	194	350	329

Source: JERSILD, A. T., MARKEY, F. V., and JERSILD, C. L. Children's fears, dreams, wishes, daydreams, likes, dislikes, pleasant and unpleasant memories. *Child Develpm. Monogr.*, 1933, No. 12, 98–99. Used by permission.

given the percentage distribution of the content of the daydreams as reported by the children.

Commenting on the results obtained, Jersild, Markey, and Jersild pointed out that the central theme of a large number of the daydreams is amusement, play, or activity of some kind, in which mention is made of some form of self-glorification. Many daydreams deal with material possessions in the form of toys, clothes, food, money, and improved living conditions. Older children had many more daydreams in which they played a heroic role or in which they occupied an improved or superior status than had the younger children. The daydreams of younger children dealt more with diversions and amusements. For the most part, the daydreams of boys and girls resembled each other quite closely.

Daydreams in Preadolescence. Daydreaming is proverbially an adolescent trait, but perhaps at no other time is it engaged in so much or in so dangerous a form as during the preadolescent months. At this time, it serves as a retreat from unpleasant reality; it helps to occupy the hours that are spent in isolation; and it gives the daydreamer an opportunity to indulge in self-pity and self-sympathy.

The typical daydreams of this age are of the suffering-hero type in which the preadolescent sees himself first as a martyr in the hands of parents, teachers, or friends. At the end of the daydream, he turns out to be a hero and derives great pleasure from both experiences. Daydreaming of this sort gives the preadolescent an opportunity to pity himself and intensifies an antagonistic attitude toward society which already exists. This results in his believing that the world is against him.

The "foster-child" daydream is a common form of the suffering-hero daydream occurring in the preadolescent years. Conklin (1920) reports that nearly all children at some time or other believe that they are the children of other parents, usually of higher social and economic status than the parents with whom they live. To discover how prevalent and how strong the foster-child daydream is, Conklin made a questionnaire study, using high-school students in their junior and senior years and college students from the freshman and sophomore classes. He found that 28 per cent of the 904 students answering the questionnaires could recall having experienced this type of daydream, though it was slightly more common among girls than among boys. Over half of the students reported that the daydream never took any definite form, while 18 per cent of them believed they were children of great parentage, 15 per cent believed they were orphans or foundlings, and a few believed they were strange, mysterious, or supernatural beings.

PETS

All children like to play with pets. Even little toddlers enjoy romping with a tame kitten or puppy. As the child grows old enough to want playmates to share his playtime, he finds a pet, especially if the pet be a dog or a cat, a satisfactory substitute when no human playmates are available. During the preadolescent period, when the child's feelings are easily hurt and when he feels that everyone misunderstands him, pets are especially satisfactory playmates.

Burk (1900) and Lehman (1928) have studied the child's interest in playing with pets as a type of play activity. Burk found that interest in dogs and cats increases rapidly from seven to fourteen years, with a peak around the twelfth year. Boys show a marked preference for playing with dogs rather than with kittens, and the same preference is shown by girls, only in not so marked a manner. The girl's interest in cats, Lehman found, culminates sooner than her interest in dogs.

FACTORS INFLUENCING PLAY

Not all children play alike. While it is true that the play interests of the child conform more or less closely to a pattern, there are, however, variations which may be traced to one or more of the following factors:

1. Health. It is a well-known fact that healthy children play more than sickly ones. The healthier the child, the more surplus energy he has, over and above the requirements for living, and hence the greater his energy for play. Reports from public-health nurses, charity workers, and teachers show that underfed and undernourished children are much less playful and that they care less about the toys given to them than do healthy children.

During the preadolescent years, the effect of health on play is especially pronounced. At that time, the individual's entire play program changes. From interest in games and sports of all types, involving strenous physical exertion and a number of play companions, the preadolescent turns his attention to reading, card games, and the quietest forms of sports, which involve few playmates. On the whole, his play is solitary rather than social.

2. Motor Development. The degree of motor development attained at a given age plays an important role in determining what the child's play will be. When, for example, the child is incapable of throwing and catching balls, he cannot take part in the many ball games that his classmates do, even though he may be of the same age as they. Similarly, poor motor coordination makes it impossible for a child to cut, crayon,

paint or make many of the things from which kindergarten and first-grade children derive such keen enjoyment.

In a study of wheel play materials (wagons, doll carriages, kiddie cars, and tricycles), Jones (1939) noted a dependence on the degree of neuromuscular coordination that the child had attained. At the age of twenty-one months, for example, the child pulled and pushed the toys; at twenty-four months, he pulled and pushed with control and directions; at twenty-nine months, he propelled for at least 7½ feet; and at thirty-six months, he propelled skillfully.

3. Intelligence. As early as the first year, the child's play is greatly influenced by intelligence. Bright babies are more active and playful than dull ones, and their play shows greater ingenuity. As the baby passes into the second year, marked differences are apparent in the play of bright and dull babies. The bright child rapidly advances from sensory to imitative play, and soon the element of imagination is apparent. This is not true of the play of dull children. Month after month, their play shows little change, and it is soon obvious that they are lagging behind other children of the same age. The older they become, the more apparent is this gap.

With increased mental age, there is a lessening of the number of play activities. There are also fewer play activities of a social type and more forms of solitary play, especially reading. At the time when competitive games and sports are very popular, the bright child shows far less interest in them than does the child of lower intellectual level. Likewise, his interest in competitive sports as a spectator is generally mild. Interest in intellectual games such as card games, guessing games, and games of chance is, on the other hand, more pronounced in the individual of very high intelligence.

In a study of two groups of fifth-grade children, the first with a median I.Q. of 120.5 and the second with a median I.Q. of 83.5, Boynton and Ford (1933) found the bright children averaged 45 to 50 minutes a day more in play than did the dull children and nearly an hour a day more in mental recreation. The same versatility of play interests was noted by Lehman and Witty (1927, 1927*d*, 1928) in children with I.Q. scores above 140 as was noted in children of average intelligence, but there was a difference in the type of play activity engaged in. The gifted children were more solitary and less social in their play interests; they spent more time in activities involving reading; they enjoyed humor more, such as looking at comic strips, reading jokes, and funny sayings; and they participated in fewer activities of a motor type that involved vigorous physical play than did the average children. The gifted child, Terman (1925)

found, shows less preference for competitive games than the average child and shows a preference for playmates older than himself.

When a child's play is conspicuously different from that of other children of the same age, Hollingworth (1926) found, the child's intelligence diverges far from the average. Children tend to play with others of like mental age. Moderately gifted children are accepted as playmates by children slightly older than they, but children with I.Q. scores above 170 or 180 have noticeable difficulty in play with other children. Hollingworth gives an interesting example of this in the case of a boy with an I.Q. of 187 who was unpopular with children of his age because he insisted upon reorganizing play into a complicated pattern. He was not accepted by children of his own mental age, which was twelve years, because he was regarded by the twelve-year-olds as "too little to play" with them. He therefore compensated for lack of playmates by collecting, reading, and arithmetical calculations.

The role of intelligence in the play of the child is especially noticeable in reading. Early interest in reading and ability to read are found in children with high intelligence-quotient scores. Very bright children at every age spend more time in reading than do children of average intelligence, and they have a wider range of reading interests. The type of reading they prefer also differs from that of the average child. Gifted children enjoy reading dictionaries, atlases, encyclopedias, science, history, biography, travel, folk tales, informational fiction, poetry, and drama. Fairy tales are disliked and detective stories preferred above crude adventure and mystery. Emotional fiction appeals less to gifted than to average children, and an interest in romance occurs even before the child is ten years old (Hollingworth, 1926; Terman, 1925).

In a study of the relation of intelligence to hobby participation, Boynton (1941) reported that hobbies of collecting, of playing musical instruments, and of reading history, science, biography, and the like are most likely to be participated in by those of superior intellectual ability. By contrast, no single hobby was found to be associated consistently with children of below-average intelligence. Furthermore, very superior children had a greater diversification of hobby interests than did the very inferior ones; and the child without a hobby is more likely to be below average in intelligence than is the child who has hobbies. This was found to be especially true of girls.

When mental defectives with an average I.Q. of 66 for girls and 68 for boys, with an average age of seven years six months, were given 30 minutes for free, spontaneous play in a room in which a variety of play materials were displayed, and the results were compared with

matched groups of normal children, Horne and Philleo (1942) noted that the normal children showed a markedly greater preference for play materials which lead to constructive activity than did those who were mentally defective. They also showed a somewhat greater avoidance of games and toys which led to more or less definitely prescribed play activities. The children of normal intelligence showed greater stability in the duration of their interest in each play material chosen.

4. Sex. During the early years of life, there is no real difference in the play activities of boys and girls. Given the same environment and the same toys, no really significant difference would be apparent until the "gang" age. But inasmuch as there are, in most homes, different environments and different toys for the two sexes, differences in play begin to appear at an early age. Girls are given play equipment which encourages make-believe play, such as housekeeping materials and materials for creative play, as crayons, paints, clay, and blocks. Boys, on the other hand, are encouraged to shun the "sissy" toys and are taught to play with more masculine playthings, as soldiers, wagons, balls, blocks, wood, and all materials needed for construction. Boys, on the whole, engage in more vigorous play than girls.

The most pronounced sex differences in play come during late childhood, especially between the ages of 8½ and 10½ years, according to Lehman and Witty's (1927) report. The play of girls is less strenuous and active but more imaginative than that of boys at that age. Girls have, however, a larger repertoire of play interests than have boys. They do not have as keen an interest in competitive play as boys, nor are they as keenly interested in play activities that require mechanical ability and motor skill.

Sex differences in reading interests, studied by Terman and Lima (1927), showed a preference for stories of adventure and mystery in the case of boys and stories of home and school life in the case of girls. Only a slight sex difference in interest in looking at the Sunday "funny paper" was found by Lehman and Witty (1927*a*). Terman's (1925) study of gifted and average children showed that boys scatter reading over a larger range than girls. Girls, on the other hand, are apt to read the same books two or more times. Boys read three times as many books on adventure or mystery as girls, while girls read five times as much emotional fiction as boys.

5. Tradition. Play, like many other aspects of daily life, is influenced by tradition. It is traditional for girls to play with dolls and household toys, regardless of whether or not they interest the girl. Likewise, there are certain play activities that are traditionally attributed to boys, such as playing soldiers or playing with trains.

Traditional games which children for generations have enjoyed are taught to each new generation of children as soon as they are able to learn them. Hide-and-go-seek, tag, blind man's buff, and cops and robbers are just a few of the games that are passed along from one generation to another. Among the lower income groups, tradition plays a more important role in influencing a child's play than it does in the higher income groups, where more money can be spent for new and different toys.

6. Season. What the child plays depends to a certain extent upon the season of the year. Roller skates, jumping ropes, jacks, and bicycles come out with the first warm days of spring. Summer brings a shift of interest to wading, swimming, and boating; then the cool days of fall renew the child's interest in the more active play enjoyed during the spring months. With the approach of winter, the child looks forward to snow for sledding, snowball fights, ice-skating, and in rural districts, sleigh riding.

Games and sports are likewise influenced by the seasonal factor. As a general rule, the more active games are reserved for the cooler months of the year and those that require less exertion, for the warmer months. Baseball, for example, because it is less strenuous than football or hockey, is regarded as a spring and summer sport, while football and hockey are reserved for the cooler months of fall and early winter.

7. Environment. Children from poor environments play less than do children from better environments. This is due, in part, to a difference in health. But, to a large extent, it may be traced to the fact that children from poor environments have fewer toys, less time, and less space in which to play than do those who come from economically better environments. While it is true that there are often more play companions available in the poorer environments, this factor alone is inadequate to compensate for the other factors mentioned.

Comparison of the play of town and country children has shown some interesting differences. Because of the geographic isolation of rural children, team games are difficult to organize. As most rural children have few toys and little play equipment, imagination is used to supplement deficiencies in material. Likewise, the typical rural child is expected to help with the work of the farm or the home and consequently has less time for play than the typical city child.

Lehman (1926) compared the play of town and country children and found that rural boys under 10½ years of age engaged in fewer activities than did boys of the same age who lived in town. After 10½ years, the former engaged in a larger number of activities. This greater diversity of interests arises from the fact that rural life offers certain recreational

interests not found in cities. Country children climb porches, trees, fences, and posts more than do town children, and they also sing and whistle more.

During war periods, the play of children reflects the war activities and war spirit everywhere present in their environment. How war influences even the kindergarten child was investigated by Bonte and Musgrove (1943) during the Second World War. They reported the war's influence is not limited to the making of models of war but is also observed in active, dramatic play.

How the socioeconomic status of the family influences the child's play was the subject of an investigation by Boynton and Wang (1944) into the play interest of fourth-, fifth-, and sixth-grade children. They reported that a progressive increase in preference from the lowest to the highest economic groups was shown for badminton, swimming, tennis, football, and watching games, all of which definitely cost money. Activities liked more by children of the lowest economic status than by those of the highest were skating, ring-around-a-rosy, London Bridge, farmer in the dell, hopscotch, drop the handkerchief, dodge ball, and playing jacks, none of which required much financial outlay. The children of the poorer economic groups had about as much breadth or diversification of interests in play activities as did children from the average or the highest economic level.

8. Amount of Leisure Time. The amount of leisure time the child has determines not only the amount of time he plays daily but also the type of play engaged in. With limited time, the child engages in play that can be completed in the time available, and, when limited free time is the result of duties imposed upon him, he is apt to be tired when playtime comes. He consequently engages in play activities that require only a small expenditure of energy.

The amount of leisure time depends primarily upon the economic status of the family. Fox (1934) reports that, in the case of children living in a residential suburban community, those of the higher economic level had few home duties and little or no work outside the home. The children from poorer homes, on the contrary, had less time for leisure activities because of the duties imposed upon them. In the country, children generally have less leisure time than city children of the same economic strata, because they are expected to help their parents.

9. Play Equipment. The amount and type of play equipment available have a marked influence on the play life of the child. Given certain types of toys, the child will use them, and his play activities will thus be influenced by them. Should the play equipment, for example, favor constructive play, as in the case of blocks, sand, or hammer and nails,

the play will, of course, be primarily constructive. Predominance of dolls, household equipment, or soldiers puts emphasis on imaginative, make-believe play. Similarly, as children grow older, play equipment for team games encourages them to play such games, while lack of equipment necessitates finding other outlets for their play interests.

B. Johnson (1935) found that among young children less bodily exercise and more play with sand and dirt, more games, more undesirable behavior, and a greater number of social contacts occurred when there was a reduction of play materials at the school playgrounds. This encouraged the children to become very resourceful in all situations. When, on the other hand, the children had more equipment, they engaged in more bodily exercise, showed less social and also less undesirable behavior. Thus, individual endeavor, Johnson found, is encouraged and social play is discouraged by large amounts of play material.

Factors influencing Play:

1. Health
2. Intelligence
3. Motor development
4. Sex
5. Profession
6. School
7. Environment
8. Play equipment
9. Amt of leisure time.

CHAPTER XI

DEVELOPMENT OF UNDERSTANDING

At birth, as James (1890) pointed out many years ago, the child's consciousness is a "big, blooming, buzzing confusion." He has no understanding of his environment or of what he observes around him. Gradually, as a result of maturation and learning, the child begins to understand what he observes, and consequently his environment begins to be meaningful to him. But, as no two children have the same intellectual abilities or the same experiences, no two individuals can be expected to have the same understanding of an object or situation. As a result, each child interprets his experiences in terms of memories of previous experiences.

CHILDREN'S CONCEPTS

The child's concepts of the world in which he lives, which consist of the ideas he associates with objects or situations, increase with experience and with his ability to perceive relationships between new and old situations. The more readily he can associate new meanings with old experiences, the more meaningful these old experiences become. Development of the concept of *orange*, for example, comes from the association of new meanings with the original meaning of an orange as a fruit. When the child learns that a specific color is called *orange*, that a type of tree is called *orange*, that a drink is called *orange* juice, and that a certain kind of flower is called *orange* blossom, he gradually understands *orange* to mean more than a fruit, as he had originally thought of it. His concept of *orange* is broadened and developed through new experiences associated with old experiences.

Children's concepts are difficult to study, for three reasons. (1) Many of the child's concepts have meanings so different from those of adults that the adult is apt to overlook them completely. To a child, for example, "doggie" may mean all small animals that walk on four legs, have a tail, and soft fur. The child is including, in this concept, cats, baby bears, and many other small animals seen in a zoo. To the adult, on the other hand, the concept of dog is specific, and as a result the adult does not realize the child's concept is broader and more general in scope. (2) Many of the child's concepts exist in different degrees of perfection and are not formulated well enough for the child to be able to express them in terms understandable to an adult. (3) In young children, and

also in older children with limited vocabularies, many concepts exist in the child's mind which cannot be expressed in verbalized form. The result is that it is impossible for the adult to know just what these concepts are or to be able to study them in an objective way.

Observations of babies and young children have shown, however, that concepts develop rapidly during the early years of life. The baby's recognition of familiar people and objects in his environment is accompanied by pleasure responses, while his recognition of people and objects as new and strange is accompanied by fear and withdrawal responses. The way the baby responds to the sight of his bottle, to familiar toys, or to outdoor clothing, all indicate that he understands what they mean. Even though he cannot, at that early age, express in verbal form what the meanings are, and even though they are probably vague and indefinite in his mind, there is nevertheless ample evidence that there is a beginning of understanding on the young child's part.

General vs. Specific Concepts. In the development of meaning, the young child first responds to the *total situation* rather than to any one part of it. He does not notice details as quickly as he observes the object as a whole. The result is that objects or situations which have elements in common are responded to as if they were the same, and the young child develops concepts of a general type in which meanings are vague and unformulated. With experience, the child distinguishes partial elements of objects and groups together those that have features in common. In this early type of classification, the object's function and structure play a dominant role in the child's understanding of its meaning.

With increase in maturity, there is a tendency for the child's concepts to become more specific. No longer is the concept of *toys*, for instance, vague and indefinite to the point that it is applied to any object with which the child plays. Rather, it becomes specific and is applied only to playthings as such, objects which have no other function and are used for no other purpose.

A study of the drawings of children, 4½ to 8½ years, by Hurlock and Thomson (1934) revealed some interesting facts about children's concepts. The children were asked to draw eight commonplace objects, as man, girl, house, dog, tree, automobile, flower, and boat. No restrictions were placed on the procedure, and the children were free to draw these objects as they wished. In that way, it was possible to determine the meanings that these objects had for the children.

The children's drawings offered some interesting data about concepts. It was found that with increase in age there was a tendency to perceive the specific rather than the general. Likewise, as children grow older, they perceive more details and associated objects than they formerly

did (see Fig. 66) and there is a decided increase in the accuracy of these perceptions. In most instances, some background was given with the drawings, which shows that children have a tendency to perceive things as units, even though certain details stand out in a more clearly defined manner than do others.

In a somewhat similar study of children's drawings, Hildreth (1941) noted that the child perceives wholes rather than parts unrelated to wholes. His feelings and emotions influence what he sees; and meaning,

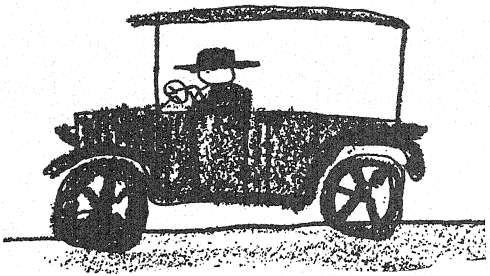

FIG. 66. What a child perceives as shown by the details he stresses in drawing. Drawing of a car by a boy of 6 years 1 month, with an I.Q. of 115. (*From J. L. Thomson, Children's drawings: an experimental study of perception. Unpublished Master's Essay, Columbia University Library*, 1933. *Used by permission.*)

in turn, exerts an influence on what he sees. The child's perceptual development, Hildreth concluded, progresses from general to specific.

HOW CHILDREN PERCEIVE MEANINGS

A study of how children perceive the environment in which they live, and what meanings they associate with what they see, hear, smell, or taste, will show what understanding they have at different ages. Because of their limited knowledge and experience, it is apparent that they cannot perceive an object or a situation in the same way as an older or more experienced individual would, though their sense organs are equally well developed. Like an adult, they interpret new experiences in relationship to knowledge formerly acquired.

Children at first perceive things on their face value. They are unable to interpret what they observe except as it appears to them at the time. Any subtle meaning, not apparent at first glance, escapes them. This was well demonstrated in the experiment by Shaffer (1930), in which a study was made of children's ability to interpret cartoons, or symbolic

drawings which are not meaningful in themselves but are significant of general concepts. Shaffer selected 17 cartoons from those used in an experimental course of study in history, geography, and civics for grades 7 to 9. These he gave to children in grades 4 to 12, and he found a pattern of response according to the age of the children. At first, the response was merely repetition of title or name of the cartoon, then description of the cartoon, later concrete interpretation, and in the oldest groups, abstract interpretation. There was a marked lack of relationship between the percentage of abstract responses and the percentage of correct responses.

Developmental tendencies in preschool children's perceptual reactions to pictures were noted by Amen (1941). The picture is interpreted, she found, first, in terms of static form and, later, in terms of activity. Interpretation in terms of inner activity (thought or feeling) proved to be a more mature pattern of interpretation than that which used outward activity. Pictures are first interpreted concretely or literally with slow development toward more subjective interpretation. There is some degree of self-identification present and a tendency to interpret it in terms of a whole or of a detail standing for a whole.

Total Impression vs. Analytical Approach. It is difficult to tell whether children, especially young children, get more meaning from a total impression than from an analytical approach to a situation. Observations of children show that they perceive meaning, no matter in what position they view the object, as when they look at pictures in a book sideways or upside down. This would suggest that they perceive more meaning from an impression of the total object or situation than from an analytical approach to it.

Newhall (1937) showed charts, on which were drawn concrete and geometrical forms, to children three to five years old. The procedure was to put on the table, before the child, five figures and then ask the child to indicate the figure on the table which corresponded to the figure on the chart on the wall. He found that children could identify familiar forms—chair, horse, or candle—nearly as quickly and correctly when the pictures were shown upside down or in left-right reverse position as when they were presented in the normal position.

Sex differences in the perceptual attitude of children have received considerable attention, especially among German psychologists. The general opinion, based on these studies, is that boys are better than girls in abstracting properties from an object, while girls are more inclined to perceive objects as a whole.

Using the Rorschach technique, Rose and Stravrianos (1943) studied sex differences in perceptual attitudes of children, ages five to eleven years.

Among the five- to seven-year-olds, they found a more mature attitude among the girls than among the boys, in their perceptual organization of the blot. The girls had more detail and less extreme overemphasis on whole responses than the boys; they proved to be distinctly superior in their use of "human" content and to have less "animal" content; their responses were generally less vague; and they showed a more mature attitude toward integrating color and form qualities of the blot.

In the seven- to nine-year-old group, the girls still persisted in giving more detail responses and refrained from giving as many whole responses as the boys. The girls at this age have fewer movement responses, indicating a poorer integration of perceptual and imaginal factors. In general, it was found, at every age in the group studied, boys tended to abstract while girls were inclined to perceive an object as a whole.

Animism. Because of the young child's limited experiences and knowledge, he does not distinguish between living and inanimate objects. On the contrary, he believes, as do primitive peoples, that all objects have the same life qualities that one finds in the human being and are, therefore, *animate*. *Animism*, or the tendency to ascribe consciousness to inert objects, is one of the outstanding characteristics of the young child's perception. As a result, his concepts are realistic and, consequently they are often faulty.

Piaget (1929) recognizes four successive stages in the animistic concepts of young children. In the first stage, when children are four to six years old, everything that is in any way active is regarded as conscious, even though it be stationary. Consciousness is attributed only to things that can move, in the second stage, which occurs between the ages of six and seven years. The sun and a bicycle, for example, are regarded as conscious, while a table or a stone, both of which are inert, are not. Between the ages of eight and ten, the third stage, an essential distinction is made between movement that is due to the object itself and movement that is introduced by an outside agent. Bodies that can move of their own accord, as the sun or the wind, are looked upon as conscious, while objects that receive their movement from without, such as bicycles, are regarded as devoid of consciousness. In the fourth and final stage, which begins at the age of eleven years, consciousness is restricted to plants and animals, or to animals alone.

Russell (1940, 1940*a*) and Russell and Dennis (1939), in a study of animistic concepts of children, used a series of questions related to the animate or inanimate nature of 20 objects, such as a stone, knife, mirror, comb, chair, bird, tree, and grass. When these questions were given to children ranging in age from three to fifteen years, it was found that they could be classified in the four stages of concepts as suggested by

Piaget. With increases in mental and chronological age, they were found to pass sequentially through the series of concept stages.

When Huang and Lee (1945) asked children, three to eleven years of age, questions about 10 different objects (dog, tree, stone, bicycle, etc.), as to whether the object has life, feels pain, is capable of waiting, etc., they found that inanimate objects were said to be alive in only a small proportion of cases. Even in cases in which errors were made, few were credited with possessing anthropomorphic traits. Knowledge about traits, they noted, was in general more advanced than was judgment regarding animation. There was not a general tendency to give animistic concepts but rather to give the apparent characters of the specific object.

How widespread animistic concepts are among young children is not known. Dennis (1938), in an analysis of baby biographies, found that almost all biographers recorded instances of child animism. From a survey of literature regarding causal thinking in children, Huang (1943) found that animistic concepts were less frequent among preschool children than were simple and naive physical concepts.

In an investigation of the ideas of physical causality in young children (three to six years old), McAndrew (1943) found the tendency to animistic explanation was very small and generally did not exceed 4 per cent of all given. For example, when the child was asked, "What makes the engine go?" every child stated that the presence of a human being was necessary for the guidance of the engine. What few animistic explanations were given, the child informed McAndrews, were transmitted to him by one or both parents, usually the mother.

DEVELOPMENT OF MEANING

Development of meaning progresses rapidly during the early years of life. At first, the baby discovers the meaning of the objects in his immediate environment through *sensory exploration*. He looks, listens, and smells, tastes, and touches everything within his grasp. As a result, he observes meanings which, when fused with meanings previously observed, cause strange and unfamiliar objects to become familiar and no longer the source of mystery that they previously were. The more often he can observe an object, with short time intervals between the observations, the more quickly will it become meaningful to him. The baby comes to know the mother, for instance, more quickly than he does the grandmother, because of the more frequent opportunities to observe the former as contrasted with the latter.

Role of Motor Manipulation. When motor coordination has reached a point in its development which enables the child to handle things at will, motor manipulation supplements the information formerly gained

through sensory exploration alone. Through touching and handling objects, the child discovers qualities, such as smoothness, softness, or warmth, which could not be observed by looking at them alone. Too often, the hands-off policy, which so many adults enforce, results in depriving the child of one of the most valuable sources of information that he has.

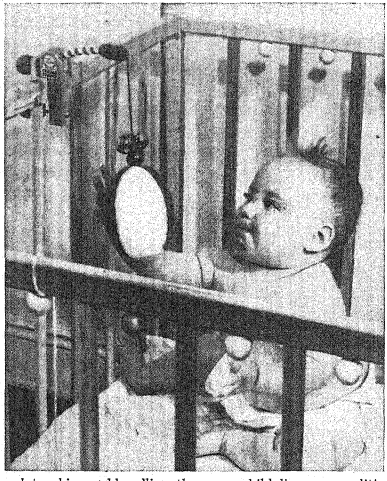

FIG. 67. Through touching and handling, the young child discovers qualities in the objects in his environment. (*Courtesy of Childhood Interests.*)

While it is true that, owing to lack of well-developed motor control, many little children are destructive in their desire to understand the meaning of objects that arouse their curiosity, this destructiveness is usually accidental rather than intentional. Given an opportunity to explore with adult supervision and aid, the young child will not only satisfy his curiosity with minimum destructiveness but will also discover more meanings than would be possible if he were left to his own devices.

Role of Questioning. As soon as the child is old enough to put together words in a sentence, he begins to ask questions about things which arouse his curiosity. The "questioning age" begins around the third year and reaches its peak at the time the child enters school, at

approximately six years of age. How important a role questioning will play in the development of understanding after that time depends to a large extent upon what success the child has in satisfying his curiosity in this way. He will unquestionably continue to use this method of gaining information throughout the rest of his life, but how useful it is to him will depend upon the satisfaction he derives from it during the early years of childhood.

While it is true that the young child is motivated to use questioning primarily because of genuine curiosity, he also asks questions to check upon or to supplement the information he has gained through his own experimentation. In many instances, he is not satisfied with what he has been able to discover through his own experimenting, and he then tries to supplement what he has learned by questioning those whom he believes to be better informed than he. Questioning is also motivated at times by a desire to attract and hold the attention of others, rather than by genuine curiosity. If such be the case, the child shows little interest in the answers given to his questions, and more often than not he asks the same question several times.

Many biographical studies of young children refer to the "questioning age." Boyd (1926) found that 21.6 per cent of the 1,250 remarks of his daughter were questions. Brandenburg (1915) noted that 18 per cent of his child's conversations were questions at thirty-eight months, and 20 per cent, at fifty-two months. Studies of groups of children have shown the important role played by questioning in the early years of life. Smith (1926) reported that the percentage of questions in the speech of children increases up to the fifth year.

Davis (1932) asked mothers to record the questions raised by their children, and all significant facts related to the circumstances under which questioning took place. The data thus obtained showed that boys ask questions at a faster rate than do girls, and they ask more questions involving causal explanations, while girls ask more on social relations. Of the questions asked, 86 per cent were asked of adults and 14 per cent, of children; 88 per cent resulted from immediate situations and the rest from remote events. In Fig. 68 is shown a distribution of categories of questions. In the case of children from thirty-six to fifty-four months of age, questions make up 14.4 per cent of the conversations of the children in the upper socioeconomic classes, McCarthy (1930) found, as contrasted with 7 per cent in the case of children of the lower classes.

Smith (1933*a*) noted that, at two years, questions, for the most part, take the form of "what" and "where," as questions relating to the whereabouts and names of persons and objects. As children approach the fourth year, "why," "how," and "when" questions are most frequent.

Girls, as a rule, ask more questions about the names of things, places, and social rules, while boys use "how" and "why" more. The number of questions asked decreases with age, though at all times children from the upper occupational groups ask more questions than those of the lower groups, and only children, more than those who have siblings in the family.

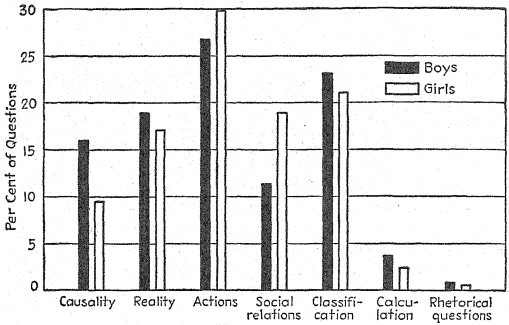

FIG. 68. Percentage distribution among the functional categories of questions asked by boys and girls. (*From E. A. Davis, The form and function of children's questions. Child Develpm.*, 1932, 3. *Used by permission.*)

Girls, according to Fisher (1934), ask more questions than boys. Intelligence, however, does not affect the number of questions asked.

The following conversation of a 4½-year-old girl and her mother, following a story about a six-year-old girl, quoted by Jersild (1947), will illustrate how the child uses questioning to acquire information.

CHILD: I'm four, aren't I?
MOTHER: Yes, four years.
CHILD: What's a year?
MOTHER: (*Explains.*)
CHILD: Is that a long time?
MOTHER: Quite a long time.
CHILD: H'w long?
MOTHER: It's hard to explain, but it is a lot of days, 365, and that's many.
CHILD: Well, but how long?
MOTHER: Well, well, you know when it was Christmas.
CHILD: Oh, yes, and I had a tree, and once I had the tree in the corner, and once I had it on the table.

MOTHER: Well, that was twice, and it takes a year to have a Christmas. You see we have Christmas, then the time between that Christmas and the time between the next is a year.

CHILD: Well, that's a very long, long time. When I was very small we had a Christmas. Is a year a birthday?

MOTHER: Well, you have one birthday, then the time between is called a year, then you have the next birthday.

CHILD: Yes, three then four—then five—Say, how old are you?

MOTHER: Thirty.

CHILD: How did you stretch up? [Quoted by permission.]

Role of Reading. Even before the child is capable of reading, he learns many meanings from looking at pictures, from being read to, or from having stories told to him. Even the simplest story books introduce new meanings into the child's life, and his careful observation of pictures shows him details of objects and persons which he formerly had not noticed. Because children enjoy looking at the same books, time after time, and hearing the same stories so often that they can repeat them word for word, they acquire more specific factual material than if their interest were of a more casual, superficial sort. Added to this is the fact that they will ask innumerable questions about anything that arouses their curiosity in what they see or hear and, in that way, supplement their information.

After the child has learned to read well enough so that he does not have to give conscious attention to the mechanics of reading, his reading for pleasure is motivated to a large extent by his desire to acquire information about things which arouse his curiosity. Even the required reading of the school, which has been assigned to him rather than voluntarily selected, teaches him many things which he would not be apt to learn through other sources. A careful analysis of children's reading interests, as discussed in the chapter on play development, will show that the child is motivated by a desire to acquire information about things which are a source of curiosity to him. In most instances, his curiosity is not satisfied by the answers he receives to his questions or from his own observations, and as a result he seeks further information by reading.

Role of Reasoning. To perceive meanings, the child must be able to see relationships. With each succeeding year, new experiences are interpreted in terms of previous experiences, and the child associates meanings with the new ones, as a result of his realization of how they are related to what he has already learned. The greater the similarity between the new and the old, the more meanings the child can associate with it, provided he is able to perceive the relationships that exist. As a result of this, new experiences become increasingly more interesting to the child and stimulate his curiosity to explore them further.

Before the baby is a year old, observation of his behavior shows that he is interpreting new happenings in terms of what he has already learned. This ability is very pronounced from the time he is three years old and accounts, to a large extent, for the marked increase in knowledge that is apparent at that age. The ability to generalize in children below the two-year age level was investigated by Welch (1939) in an experiment in which plywood plates varying in form and size were used as experimental material. Generalizations, he found, were based on similarity of form rather than on color. Using the Weigl Color-Form and Sorting Tests, Reichard *et al.* (1944) found a steady increase with age in ability to group together objects which belong together and in ability to give abstract, conceptual explanations of the groupings.

Because the ability to see relationships is so closely correlated with general intelligence, most intelligence tests include tests that measure this ability. Tests to determine how quickly and accurately the child can put the parts of picture puzzles together, how well he can match different geometric forms or tell the differences in weights of boxes and lengths of line are found in all standard intelligence scales.

What meanings one can expect at different ages is measured at every age level. Two specific examples will be enough to illustrate this point. In the Terman and Merrill Revision of the Stanford-Binet Scale (1937), the child is shown a card on which are attached a cup, shoe, penny, knife, automobile, and iron. The following questions are asked to determine how meaningful each object is to the child:

1. "Show me what we drink out of."
2. "Show me what goes on our feet."
3. "Show me what we can buy candy with."
4. "Show me what we can cut with."
5. "Show me what we ride in."
6. "Show me what we use to iron clothes."

In order to pass the test, the child at 2½ years must be able to identify three objects, and at 3½ years, five objects.

The "comprehension questions" of the Terman-Merrill series likewise illustrate what one can expect a child to understand at different ages. The child is asked:

At 3½ years:

"What must you do when you are thirsty?"
"Why do we have stoves?"

At 7 years:

"What's the thing for you to do when you have broken something which belongs to someone else?"

"What's the thing for you to do when you are on your way to school and see that you are in danger of being late?"

At 8 years:

"What makes a sailboat move?"
"What should you say when you are in a strange city and someone asks you how to find a certain address?"

Role of Training. In the development of perception, training plays an important role. While it is true that anything new or interesting arouses the child's curiosity, there are nevertheless many things that he would not notice unless his attention were directed specifically toward them. The more he is encouraged to observe details, the more meaningful the objects in his environment become. Toys, if properly selected, help to develop the child's perception of space and color, just as well-selected books and pictures help him to develop an ability to perceive the beautiful or the comic. Likewise, strict adherence to a definite time schedule enables the child to judge time better than a haphazard schedule would. Music in the home, as a part of the play life of the child, builds up not only an appreciation of music but also a genuine fondness for it.

EXPERIMENTAL INVESTIGATIONS OF PERCEPTION

How the child perceives specific objects and situations, and how his concepts are developed, have been investigated in experimental researches. These research studies relate to space, weight, number, time, self, social, and aesthetic and comic perception, each of which will be summarized briefly.

1. Space Perception

Judgments of direction and distance are difficult for young children and can be learned only through experience. In judging space accurately, the child must learn to compare the space to be perceived with familiar objects whose size or distance from him are known. He must learn to regard the degree of clearness of outline and color and the amount of detail visible as clues, and he must learn that different sensations in the eyes, resulting from convergence or strain, help him to interpret what he observes.

Little babies rarely reach for objects more than 20 inches away from them, which shows that they have some estimate of distance even before they are a year old. Gradually, with practice in reaching for objects, the child learns not only how far away the objects are from him but also in what direction they are. He learns early to judge small distances because he has plenty of opportunity to do so.

From his play with blocks, carts, tricycles, and other favored play equipment, the child soon learns the common cues which enable him to perceive short distances accurately, provided they are studied in relation to his own body. Longer distances, because they are unrelated to his own body—for example, the distance between two trees or the length of a street block—are extremely difficult for him to perceive. It is generally not until adolescence that the child has the ability to perceive long distances correctly, and even then his judgments are often erroneous.

Influence of Training. Perceptions of distance, direction, and size are all improved by training. Toys and kindergarten equipment, as beads for stringing, blocks, cylinders, form boards, puzzles, nests of cubes, tricycles, sleds, and coasters, all give the child an opportunity to measure in terms of "long" and "short." In connection with kindergarten and school work, he learns the meaning of inches, feet, yards, pounds, and the different standard measures of space and weight, even though the concepts may be formalized to the point that they are difficult for him to apply to his everyday experiences.

Experimental Investigations. The child's perception of space has been investigated experimentally from many different angles. According to Ling (1941), the baby can discriminate between simple geometric forms (circle, square, cross, triangle, and oval) as early as six months of age and can use this discrimination as a learning cue. Terman and Merrill (1937) find that a child of average intelligence should be able to insert a circle, a square, and a triangle into a three-hole form board at the age of two years.

Updegraff (1930) studied the acuity in visual perception of distance of four-year-olds and contrasted the results with a similar study of adults. The acuity of perception was found to be surprisingly alike for the children and adults, and there was no significant difference between them in variability of successful response, from day to day. The child's perception of form was studied by Baldwin and Wellman (1928), using a series of four Wallin peg boards. The child's ability to perceive differences in form and to attempt to fit correct pegs into forms gradually increased with age, from two to six years, and with experience. No sex differences were found.

The ability of children to perceive relative size has been subjected to study by Thrum (1935), who found that at the age of three years some children have already developed concepts of magnitude. They can select the largest and the smallest objects and, later, by the age of five years, middle-sized objects. The extent of the difference in size, Thrum found, influences slightly the response made. If the difference in size is very small, the perception of relative difference becomes increasingly inaccurate.

Long (1941*a*) studied the ability of four- to seven-year-olds to discriminate between stimuli varying in size with the use of circles, squares, and rectangles. In one part of the experiment, the paired stimuli were of the same geometrical shape (large square vs. small square), and in another, the stimuli differed in shape (large square vs. small circle). The children selected the larger of the two stimuli of the same shape on practically every trial. The shape of the stimulus did not seem to affect the child's discrimination. When two shapes were used, more errors were made in selecting the larger figure, showing that this was a more difficult task for the child.

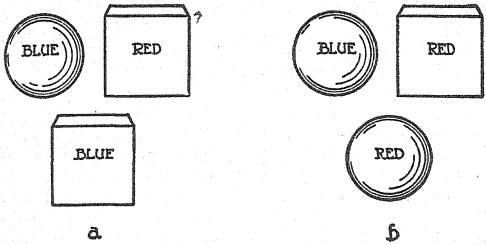

FIG. 69. Placement of forms for matching. (*From C. R. Brian and F. L. Goodenough, The relative potency of color and form perception at various ages. J. exp. Psychol.*, 1929, **12**, 199. *Used by permission.*)

The concept of roundness was analyzed by Long (1940), in the case of children three to six years old, who had been trained to respond to a ball when it was paired with a block in a discrimination apparatus. The children were then shown spherical, cylindrical, and two-dimensional figures. The children's responses indicated that all members of the group studied had established the concept of spherical roundness at that age. The concept included cylindrical roundness and two-dimensional roundness.

The question as to which plays a more important role, color or form, in the apprehension of an object, was investigated by Brian and Goodenough (1929), who required children, from two years of age to maturity, to choose between two alternatives, form or color, in matching a series of objects. The objects were presented in such a way that the child had to match on the basis of form or color but never both simultaneously (see Fig. 69 for a sample setup). For children under six years of age, solid geometric forms painted different colors and surface forms of different colors were used, while, for the older subjects, surface forms only were

used. It was found that children under three years of age showed a marked tendency to match on the basis of form rather than color; children from three to six matched on the basis of color; while those over six matched on the basis of form.

To test a child's space perception, Lord (1941) devised tests in which children pointed out different directions, which were then recorded electrically. Elementary-school children, Lord found, do not have a well-generalized notion of the cardinal directions. While they may identify south and east, they are likely to fail to identify southeast. Furthermore, they have difficulties in using directions correctly in describing locations of places, though they can fairly accurately locate cities, especially nearby cities. Girls, as a group, were found to be inferior to boys in space orientation.

Genetic Sequence. Experimental investigations of children's concepts of space have suggested that there is a genetic sequence in the development of these concepts. To test out this, Meyer (1940) used experimental situations including the fitting together of forms, the comprehension of a moving object in relation to other objects, and the getting of a block out of a performance box. From the data thus obtained, Meyer distinguished three genetic stages in the child's development of space concepts.

In stage 1—the "practical-space" stage—up to the age of 2½ years, the child reacts to objects only to satisfy his activity. They have reality mainly in relation to the child himself, who neglects relations between objects.

Stage 2—the "subjective-space" stage—from three to four years, is one in which the child begins to show an interest in the objects themselves, though he is still centered upon himself and upon his acting upon things.

In stage 3, beginning about the age of four years, the child starts to move in "objective space," in which he is no longer the center of his world but a part of it. He now knows that he must consider himself as one object among other objects in space, and he understands the relativity of the position of the objects.

To discover the child's verbalized manifestations of space, Ames and Learned (1948) kept records of the spontaneous verbalizations of children from two to four years of age. These were supplemented by the child's answers to such questions as

"Where do you live?"
"Where are chimneys?"
"Where do you eat your dinner?"

They found that, in spite of individual differences, there is a relatively uniform age sequence in the development of the major concepts of space. This sequence is as follows:

One year:

Gestures for *up*.
Wriggles for *down*.

Eighteen months:

Spontaneously uses *up*, *down*, *off*, *come*, *go*, and *gone*, chiefly with his own activities. Space words are not commonly used and the child merely looks in a direction indicated.

Twenty-four months:

Uses space words spontaneously and in answer to questions. The meanings of *in* and *out* are now apparent. He can answer such space questions as "Where is Mummy?" and can obey four directions with a ball.

Thirty-six months:

The child now shows an interest in space detail and direction, as turning left. He can tell which street he lives on but not usually the number. *In*, *on*, *at*, and *to* are the space words most often used. Others are *there*, *up here*, *home*, etc.,

Forty-eight months:

At this age, the child uses expansive space words such as *on top of*, *far away*, *way up there*, etc. He can now tell on what street and in what city he lives. (Abbreviated from pp. 82–83.)

2. Perception of Weight

Accurate judgments of weight depend partly upon judgments of size and partly upon knowledge of the weight of different materials. This is often confusing to a little child who has not yet learned from experience that different materials have different weights. A ball of cotton, for example, is judged to be heavier than a block of wood of smaller size, or a lead weight, because the cotton is larger in size than either the wood or the lead. The child's judgments are more in terms of size than of weight, and as a result many accidents with toys and household objects occur. This is due to the fact that the child does not make the necessary muscular adjustments to handle them without breakage. A small *objet d'art*, for instance, picked up by the child in his curiosity to examine it, may slip through his fingers and break because he did not expect it to be as heavy as it was and did not make the necessary motor adjustments to handle it safely.

Gradually the child learns, from experience with toys and articles

with which he comes in constant contact, that certain things are "heavy," while others are "light." Of even greater importance, he learns that he must consider what the object is made of and not judge it in terms of size alone. He discovers from experience that if he wants to determine just what the weight of an object is, he must pick it up, not merely look at it. If he holds it with his fingers, or places it in the palm of his hand, and then moves his hand up and down, as if lifting the object, its true weight becomes more evident than if he merely holds his arms stationary.

These cues, as aids in the perception of weight, are learned gradually and depend to a certain extent upon the variety of experiences the child has had. By the age of five, according to Terman's (1922) *Revision of the Binet-Simon scale*, the child should be able to tell the difference between 3- and 15-gram weights that are of the same size and identical in appearance. In the elementary-school years, between six and twelve, there is a marked improvement in the child's ability to perceive small differences in the weight of objects of the same size and shape. This ability reaches its peak of improvement around the twelfth year, when it is nearly mature in its development.

3. Number Concepts

Words relating to numbers are used soon after the child starts to speak but rarely is their meaning known. The use of number words, between the ages of two and three years, is thus merely a form of "parrot" speech. What a number really means to a child and when he can use it in a meaningful way, it is difficult to determine. This matter has been discussed by many of the baby biographers, but there is little experimental evidence concerning the matter. Douglass (1925) investigated the number concepts of kindergarten children by use of cards on which dots, 1 to 10 in number, were placed. The cards were then exposed to the child long enough for him to see them but not long enough to count them. Marbles, held in the experimenter's hand, were also presented to the child, and he was asked how many marbles there were. The results of this experiment showed an accurate concept of 1, 2, and 3, a "serviceable" concept of 4, but a rather vague concept of the numbers 5 to 10. Douglass concluded that the development of number concepts is a function of age and the educational development of the child.

Long and Welch (1941) presented children ranging in age from thirty months to seven years with three tasks: (1) the discrimination of 10 marbles from a varying number of marbles, (2) matching a group of marbles varying in number from 2 to 10, and (3) selecting the larger and smaller groups of marbles when four groups were presented. Improvement in a very regular manner appeared as age increased, they found.

By the sixth or the seventh year, most of the ability measured by these number tests has occurred. Terman and Merrill (1937) found that the average child at the age of five can count four objects placed in a row—as four blocks, beads, or pennies. At six, he can count 12 objects.

The child's concepts of large numbers, especially numbers over 100, are vague and confused. He may use the words "hundred," "thousands," "millions," or "trillions," but a close questioning as to what these numbers mean to him reveals that they mean "many" or "large numbers," but nothing more specific than that. It is not until his study of arithmetic is well advanced that these terms come to have a definite meaning for the child. Even then, the meaning is more abstract than specific, because the child learns the meaning of these terms in connection with abstract problems rather than in relation to specific situations.

4. Time Perception

Time perception in adults is none too accurate, but it is even worse in the case of children. This explains the apparent disobedience of young children when they fail to come home at the appointed time. They are unable to judge time correctly and, because of their interest in play or some other activity, time passes more quickly than they realize. The restlessness of a child during a call or when riding on trains or in automobiles may be traced to the fact that time passes slowly for the child, who is bored because he is idle.

The young child has no idea of the length of time, or no means by which to judge it. In order to estimate time units successfully, one must take into consideration the activity engaged in. One hour spent in play seems much shorter than an hour spent in school. Until the child learns that he must consider his activity when he estimates time, he cannot judge it correctly. Much of the dallying over eating and dressing, which occurs between the ages of three and five years, may be traced to faulty time perception. Because a young child does not have a crowded schedule, his dallying does not interfere with the rest of the day as seriously as it would in the case of an adult. Unless specific time limits are given for the completion of a task, the child is apt to develop the habit of dallying. Another example of the poor judgment of time units on the part of a young child is his estimate of the length of the night. Invariably, he regards this as a short period because he falls asleep quickly, sleeps soundly, and awakens only a short time before he gets up. As a result, he thinks he has been in bed for only a few minutes, instead of for the entire night.

Perception of the time of day, day of week, or season of the year is more accurate because the child can associate specific activities with the

time, and this acts as a cue to enable him to interpret them correctly. Day is distinguished from night because the former is light and the latter dark and because day is the time when he can be up and night is the time when he must sleep. Morning is perceived as different from afternoon because of the difference in activities. Morning is playtime for the young child, and afternoon is nap time and the time for clean clothes. The days of the week are likewise known through the activities associated with them. Sundays are usually known first, because the father is at home, and the routine of the day is often interrupted for family trips. By the age of four or five, most children know what day it is, though they do not have a clear concept of months and seasons until a year or two later.

Experimental Studies. Experimental studies of the child's "time sense" have been limited in scope. Several studies will serve to illustrate the approach used and the findings obtained. Elkine (1928) asked boys and girls, ten to fifteen years of age, to judge various time intervals, such as 5, 10, 15, and 30 seconds and 1, 2, 3, and 5 minutes. He found large errors in the children's judgments. The longer intervals were usually depreciated, while the smaller ones were exaggerated. The best evaluation was in the case of intervals from 30 seconds to 1 minute in duration. Boys were found to estimate long intervals more successfully than girls, while girls were superior to boys on short intervals.

A more extensive investigation of the school child's perception of time was made by Oakden and Sturt (1921). Their investigation included such problems as the child's understanding of ordinary time words and symbols; ability to form a concept of time extending into past and future; knowledge of the characteristics of definite epochs in the time scheme; methods used in thinking about historical data; and the importance the child attaches to time in comparison with other elements in his experience.

Their investigation brought out the following facts in relation to the child's understanding of time. At the age of four years, children showed little understanding of the meaning of the time of day. The five-year-olds made a greater number of errors in answering questions about the duration of time than about the time of day. After seven, few errors of this sort occurred, which showed that by that age the child had a fairly accurate knowledge of time. Before the age of seven or eight, knowledge of the day of the month and the year was limited, because counting, which is essential for this, is difficult for the child. By the age of eight to ten years, however, most children were found to be able to name the year.

The ability to think of the past as different from the present, according to Oakden and Sturt, passes through two stages of development. The

first, or "negative," stage is one in which the past differs from the present as, for example, the wearing of skins or the worship of idols. In the second stage, the child not only distinguishes historical periods but he also forms a picture of successive epochs not unlike that formed by the adult. The child's knowledge of conventional time, Oakden and Sturt concluded, is a matter of gradual development, beginning before the age of three or four and reaching the adult level at thirteen or fourteen years. The most important period in its development comes at the age of eleven, when a rapid improvement in all types of time knowledge occurs.

Time sense, according to Bromberg (1938), develops rather late in childhood. The reason is that this is an abstract concept which involves subjective appreciation. Children, for example, understand old age and youth because these are specific, but they do not understand infancy so clearly. "Young" and "old" are understood by three- to six-year-olds. Children from six, eight or nine years old have an idea of the meaning of age in years if it is near their own. At first, time to them means numbers on a clock, or some daily occurrence. Later, it develops into an abstract concept. Because time has varying meanings and is not connected with the present alone, it is very confusing to the child. For example, "now" will be "yesterday" when tomorrow comes.

Gilliland and Humphreys (1943) had fifth-grade and college students estimate, produce, and reproduce eight short intervals of time. While the college students were 15 to 18 per cent superior to the eighth-graders, the fact that the children were as successful as they were suggested that they had already developed certain clues for time estimation. More errors were made in judging short than long intervals, it was found. The short intervals tended to be overestimated, while the longer ones were underestimated.

In an experiment to determine elementary-school children's time concepts, Friedman (1944) used two sets of tests—a "primary" test for kindergarten through third-grade children and an "intermediate" test for children in grades 4 through 6. The "primary" test consisted of 179 questions, such as, What day of the month is this? How old are you? and What time is it? In the "intermediate" test, multiple-choice questions to test the understanding of time words, and questions concerning indefinite time concepts were given.

By the time children reach the fourth grade, Friedman found, they have a satisfactory comprehension of our conventional time system. By the third grade, for example, nearly all of the children could tell what year it was and which of three national holidays was the latest one passed. Primary-grade children were found to show a better comprehension of such an indefinite concept as "a short time ago" than of a

"long time ago." Building up a perspective about the future seemed difficult for the child. It seemed harder for him to imagine "tomorrow" than "yesterday."

Time Words. Several attempts have been made to determine how meaningful time words are to young children. Harrison (1934) gave 50 commonly used time words, selected from eight vocabulary studies, to children from kindergarten through the third grade. She found that the development of concepts of time bore a fairly close relationship to grade development. Some concepts of time were found to be dependent on the growth of number meanings and relationships in the child's thinking.

He cannot, for example, understand completely the meaning of "month" until he has a correct concept of 30 or 31 and their relationship to 7 days. This is true also of years. And before the child is capable of developing a sense of historical sequence, he must grasp time concepts. Friedman (1944) reported that dates and the word "generation" were especially difficult for young children, as was chronological order.

Genetic Sequence. In spite of the fact that marked individual differences appear in the child's orientation in time, Ames (1946) noted that time concepts come into use in a relatively uniform sequence and at about the same relative time in the life of every child. The pattern of development she found to be as follows:

Words indicating the present come first, then words relating to the future, and finally, words indicating the past. The use of "today," for example, appears at twenty-four months; "tomorrow," at thirty months; and "yesterday," at thirty-six months. This suggests that time in relation to ends of things is understood before time in relation to beginnings can be grasped.

The ability to tell at what time a thing happens in terms of some activity appears before the ability to give an actual clock time.

Children know morning or afternoon at four years; what day it is, at five years; the names of the days of the week, at five; and what time it is, at seven years. At that age they also know what month it is and what season. When they are eight years old, they know what year and what day of the month it is, and they can name the month correctly.

By the time they are five years old, children can first tell correctly when they go to bed; by six, when they have supper, when they get up, when they go to school, and when afternoon begins.

Most children can tell their ages when they are three years old; when their next birthday will be, at four; and how old they will be on the next birthday, by the time they are five years old.

Time Test. In order to measure children's time concepts, Pistor (1939) has devised a test consisting of four parts:

1 The Time-order Relationship Test, in which five events must be ranked in order of chronological occurrence.
2. The Time-absurdities Test, consisting of pictures with five important elements, one of which is absurd and does not belong.
3. The Time-analogies Test, in which a historical comparison must be made between two pairs of ideas.
4. The Time-casual Sequence Test, with questions which present a series of sequential events for the child to rank in order.

In a study using this test, Pistor (1940) came to the conclusion that time concepts are acquired largely through maturation, rather than by means of directed learning. Training in history and chronology had no effect on the acquisition of time concepts by children in grades 4 through 6. Because of this, Pistor advised deferring systematic instruction in history until the child had reached the levels of maturity necessary to understand the time relationships involved.

5. Concepts of Self

Before the baby forms definite concepts about other people, he forms concepts about himself. These concepts are then used as a standard by which he interprets others. He discovers meanings about his own body through handling the different parts and by looking into a mirror. This begins as early as the fourth or fifth month. He watches his fingers; pulls at his hair, ears, nose, and toes; pats and strokes his skin; sucks his fingers and toes; and watches his movements in a mirror whenever he has an opportunity to do so.

Concepts of self develop rapidly during early childhood, because of the child's interest in himself. According to the Terman and Merrill (1937) scale of intelligence tests, the two-year-old should be able to identify three parts of the body when shown a large paper doll and when asked by the experimenter to point out the "dolly's" hair, mouth, ears, and hand. At 2½ years, the child should be able to identify all four parts. According to Terman's 1922 Revision (1922), the three-year-old should know whether he is a boy or a girl, should know his last name as well as his first, and should know where his nose, eyes, mouth, and hair are.

As a matter of fact, children of three to four years of age know much more about themselves than this. They know the different parts of the body, such as the hands, fingers, feet, toes, legs, arms, and "tummys," as well as what these are used for. They also know what articles of clothing belong to the different parts of the body. By the age of six

years, Terman (1922) found that the average child could distinguish the right from the left side of his body and, in the following year, could tell how many fingers he had without counting them.

The spatial localization of the self in children, as indicated by pointing, is usually in the abdomen and lower thorax, according to E. L. Horowitz (1935). This is the area formed by the boundaries of the visual field. Among college students, the localization of self was found to be at some point intermediate between the brain and the genitals.

Gesell and Ames (1947*a*) studied localization of self in children through a study of their reactions to mirror images. At the age of sixteen weeks, they noted, the infant's reactions are largely limited to his eyes. Later, he observes his arms, hands, feet, fingers, toes, and tongue. With advancing age, the area of regard expands from a fixation of the face to an inspection of the total body image and surroundings.

Piaget (1932) maintains that the child comes to discover himself through a progressive comparison of his own body with other people's bodies. By imitating other people's behavior, he will discover his own psychical qualities. Lewin (1935) has emphasized the concept of property in the development of the consciousness of self. By the second or third year, the child can distinguish between a thing belonging to his own person and himself.

Allport (1937), on the other hand, believes that the child's concept of himself as an independent person develops only after the age of four or five years, though the development is gradual and continuous. At two years of age, for example, the period of negativism is an indication of the growth of self-consciousness which is taking place at that time.

According to Jersild (1947), by the time a child reaches school age he can understand the meaning of competition and appreciate in some fields of his activity how he compares with others. Many children at this age, Jersild maintains, are capable of a certain amount of self-criticism, and many are sensitive to the possibility of ridicule, failure, and the loss of prestige. This is likely to make the child shy and self-conscious in such performances as singing and drawing, which formerly had been quite spontaneous.

The child's concept of self as a member of a racial group has been given slight attention. Moreno (1934) found that, when children were asked to select from pictures of various racial groups the boy or the girl whom they would like to have sit on either side of them, from the fifth grade on, a larger number of Italian children began to choose Italian neighbors and a larger number of white children rejected colored children as neighbors. This, he maintained, indicates the "beginnings of a racial cleavage."

Horowitz (1939) studied the role of race consciousness in the development of concepts of self by asking nursery school children to identify themselves with pictures of white and Negro children. The Negro children, she found, had a more definite concept of their difference from one group and their similarity with another than did the white children. Clark and Clark (1939) were likewise interested to discover the role played by race consciousness in the development of consciousness of self in Negro preschool children. This was studied by means of a modification of the Horowitz picture technique. By the age of three to four years, they found, the children were able to identify themselves not only as distinct persons but as belonging to one group as distinct from another.

In the development of concepts of self, children often build up two distinct concepts. (1) One comes from external experiences and contacts with others. The child has specific concepts relating to his body, his appearances, and how he compares in abilities of different types with the children with whom he associates. This type of concept is developed first, because the child's earliest experiences are objective. As the child reaches the school age, subjective experiences become more meaningful to him. (2) As a result, he establishes another type of concept of self based on his thoughts, feelings, and emotional experiences. It is often difficult for him to coordinate the subjective and objective concepts, and consequently he is apt to think of himself as a dual personality, with a specific appearance and with a specific personality make-up. Gradually, as the child reaches adolescence, the subjective and objective concepts of self fuse, and the adolescent perceives himself as a unified individual.

6. Social Perception

Social perception means the ability to understand, from observing facial expressions and behavior of others, what their thoughts and emotional reactions are. It includes the ability to "size up" the personality of others quickly, accurately, and on the basis of the cues available. If the individual is to make satisfactory social adjustments and get along with reasonable success with all types of people, he must develop social perception. As a result of his ability to size up others, the child then modifies his own behavior to fit into the accepted social pattern. He thus becomes socialized to the extent that he is a welcome member of the social group to which he belongs.

Social perception results from observing the behavior, emotional expressions, and voices of others. Perception of sound develops early, and the baby first sizes up others by cues coming from different tones of the human voice. He learns to distinguish familiar from unfamiliar persons, and he can distinguish different individuals he knows. He can

differentiate between angry, friendly, and frightened voices, and he can tell animate from inanimate objects. The baby differentiates the voice from other sounds by the time he is one month old, and at the age of two months he shows an interest in people by smiling and laughing when he comes in contact with them. By the third month, he can differentiate between strangers and familiar persons, while at the age of six months he is greatly influenced by facial expressions.

The beginnings of social perception have been investigated by Karl Bühler (1930), who found that, at the age of three months, the baby smiles at an angry adult in the same way as when the adult looks friendly. This is social *imitation* but not *perception*. By the time the baby is five months old, however, he responds to an angry face with some negative response, generally crying. Even then, Bühler contends, the behavior is imitative, in that the baby is merely reflecting the positive and negative expressions of the adult without understanding them. It is not until he is eight months old that he responds to the emotional behavior of others in a way which signifies that he has an understanding of the facial expressions. An angry face causes the baby to turn away, while a smiling face leads to aggressive movements, such as coming toward the stranger, holding out his arms, or handing him a toy.

Because of his constant contact with them, the little child learns to "size up" parents, playmates, and teachers with a marked degree of accuracy. In the case of strangers, on the other hand, he is apt to be incorrect in his perceptions because of his limited experience in dealing with all types of individuals. Little children are often tactless for this same reason. Because of errors in social perception, they behave or speak in a manner that is regarded as rude or tactless by others. This, for the most part, is unintentional and may be traced to a wrong "sizing up" of the situation, especially when strangers are involved.

Experimental Investigations. In an experimental study of the child's ability to interpret facial expressions, Gates (1923) used photographs showing six common emotional reactions, joy, anger, fear, scorn, surprise, and pain. These pictures were shown to children, three to fourteen years old, of varying social status, and the children were asked to tell what the lady in the picture was doing or how she felt. To obtain an adult standard of comparison, Gates showed the pictures to students in an introductory course in psychology at Barnard. For children, the order of difficulty, from least to greatest, was laughter, pain, anger, fear, surprise, and scorn, and for the adults, laughter, scorn, fear, anger, pain and surprise.

Laughter was interpreted correctly by more than half the children studied at three, pain by more than half the group at six, anger at seven,

fear at ten, surprise at eleven, and scorn, at the same age, by only 43 per cent of the group. Children from the better social environments slightly surpassed those from the poorer environments in all except the interpretation of pain, but the differences were very slight. The same held true for sex differences. At the ages of four, five, and nine years, girls were slightly superior to boys, while at six, seven, and eight years, the boys surpassed the girls.

Kellogg and Eagleson (1931), using data obtained by Gates, made comparisons with Negro groups and found essentially the same results. The percentage of successful responses for both racial groups increased with age, and the order of difficulty of preceptibility for the two groups was the same. The only picture in which the successful responses of the Negro child exceeded those of the white child to any appreciable extent was in the case of fear. Although Gates found only slight sex differences in the group of white children studied, Kellogg and Eagleson found rather pronounced sex differences in the case of Negro children. Boys were found to be superior to girls among children under seven years of age, while girls exceeded boys in the percentage of correct responses made from seven to fourteen years.

Studies of the child's social concepts by Meltzer (1925, 1926) were made by giving children, from grade 4 to high school, individual questionnaires with words selected to test the child's knowledge of social situations, such as *democracy, socialist, big business, capitalist,* and *imperialism.* The number of words used by the child in a personal interview was accepted as the measure of the child's talkativeness about these concepts. The results of his study indicated that in general the number of words used is a criterion of growth in grasp of concepts. Analysis of the meanings given showed that in many cases there was a feeling about the concepts but an absence of meaning. Many of the answers showed knowledge of a particular or a fact but no general idea. In other cases, the child had ideas but too limited a vocabulary to express them properly.

What children think about nations and races has also been investigated by Meltzer (1941). Children's race and nationality concepts, he found, tend to be sterotyped as a result of the children's having one or relatively few fixed notions, which appear over and over again. Furthermore, they have definite preferences for certain nations. The most common reasons given for liking nations were that they were honest, loyal, faithful, friendly, clean, thrifty, intelligent, peaceful, etc. Dislike came mostly from not knowing much about the nations or believing them to be mean, cruel, war-loving, and "not like us."

In a study of children's attitudes toward races, nationalities, and

religious groups over a period of time, from 1931 to 1936, Zeligs (1948) found that children of today express greater sympathy for and interest in all races and nationalities than the children did in the earlier part of her study. The trend, she found, is toward a broader outlook, with greater interest in and appreciation for all people. Even though stereotypes still prevail in children's social concepts, there are fewer wrong and grotesque ideas, with greater interest, less fear, more curiosity and appreciation of people, customs, and cultures that are different. While children were found to feel closer to people who are similar to Americans in color, culture, and language, there is, in general, a trend toward a wider outlook.

7. Aesthetic Perception

What the individual perceives as beautiful depends to a large extent upon the *associations* he forms. Pleasant associations lead him to believe that the person or object he views is beautiful, while unpleasant associations result in his perceiving it as ugly. In addition to this, the new and unfamiliar is perceived as ugly, while the old and familiar is perceived as beautiful, provided the associations formed during the individual's experiences have been of a favorable sort.

Nothing is beautiful or ugly in and of itself. How it is perceived is thus a matter of individual association. What the young child perceives as beautiful is what he likes. People whom he likes are regarded as beautiful, no matter how they may be judged by others. This is illustrated by the fact that, when shown pictures of women's faces in the Terman Scale (1922), many five-year-olds pick out the ugliest rather than the prettiest face. When asked why they made the choice, the answer is invariably the same, "She looks like my nurse," "She looks like grandmommy," or "She looks like our cook." In each case, the resemblance to a person the child likes is responsible for the way the child perceives the picture.

Brightly colored, gaudy pictures which represent movements of people or machines appeal to the child. Any picture containing people doing commonplace things, or sailboats, trains, horses, or automobiles is liked by the child. Landscapes do not interest him unless they contain pictures of people or animals doing things. Preschool children's picture preferences were investigated by Olney and Cushing (1935) in a study using different types of pictures frequently found in books for young children.

The most popular pictures, they found, were those of mechanical subjects involving people (people in a boat, people starting off in an automobile); dramatic scenes with children (children getting dressed, children saying their prayers by the bed); and mechanical subjects without a human element (auto, train, airplane).

The least liked pictures were those of small, uncolored animals and animal activities; silhouettes in black and white; and small, colored pictures of animals. No significant differences were found in the preferences of two-, three-, and four-year-olds, though boys showed a marked preference for pictures involving mechanical objects, as trains, while girls preferred scenes with a strong dramatic element.

Children in the first through the fifth grade, Mellinger (1932) found, prefer realistic (true to life) pictures rather than conventionalized pictures (those in which curves and certain realistic details are omitted). They prefer pictures in color to those in black and white.

The *ability to understand* the meaning of a picture is responsible, to a large extent, for the child's appreciation of its beauty. White and Johnson (1930) investigated the problem of what young children, two to five years old, can understand about pictures by showing them spontaneous crayon drawings made by four-year-old children of the Child Institute of Johns Hopkins University. The pictures easiest for them to name had drawings of people in them, and the next easiest were pictures of houses. When compared with drawings of modern artists, it was found that the children's drawings had greater significance for the children than did those of the artists.

The importance of understanding the meaning as a factor in aesthetic perception was further investigated by White and Johnson, who hung reproductions of modern paintings on the wall, arranged in order from most impressionistic to most realistic. The children were asked to choose the ones they liked best. The pictures most frequently chosen were those which were most realistic and which, therefore, the children were most able to understand.

In an experiment in which elementary school children were given practice in judging exercises of varying degrees of aesthetic merit, Voss (1936) reported that practice without understanding the principles of art involved did not produce a significant increase in aesthetic judgment. Knowledge of the principles of art with practice in the application of these principles produced a significant increase in aesthetic judgment. Furthermore, Voss found, the principles of art can be explained in such a manner that they can be understood and applied by children as early as the second grade.

The *cultural patterns* of the social group are a factor of importance in determining what the child will perceive as beautiful. Through association with adults, little children come to accept the adults' criterion of beauty, often without questioning whether or not it fits into the pattern of their own likes or dislikes. A thing is pretty because, "Mommy says so," or ugly because the teacher has told them it was. The important role the cultural patterns of the group play in the child's aesthetic per-

ception is well illustrated by their responses to the aesthetic-comparison test in an intelligence-test series. At the age of 4½ years, for example, one of the tests in the Terman and Merrill (1937) series consists of showing the child three cards with pictures for comparison. In each case, the child is asked, "Which one is the prettiest?" Few children, unless they are definitely below average in intelligence, fail to select the one which, according to adult standards, is considered to be the prettiest.

To discover whether children prefer traditional to modern paintings Katz (1944) made up a test in which 64 modern paintings were paired with 64 traditional ones. The children were found to prefer traditional to modern paintings in a ratio of 3 to 2. This preference increased from the second through the sixth grade, indicating a shift in the direction of greater conformity with adult standards with increasing age. As children grow older, they gradually acquire adult standards of taste. Todd (1943) reported similar findings for children of ten to twelve years of age.

The "Prettiest Thing." One of the best ways of determining what the child perceives as beautiful is to ask him. This was done many years ago by Barnes (1902), who asked children, seven to thirteen years old, to write papers explaining what they thought was the "prettiest thing" and why. At the ages of seven to eight years, perception of the beautiful centered around flowers, animals, and dolls, with dolls the most important center of interest for the younger children. As the children reached the ages of twelve and thirteen years, landscapes stood out as the favorites. But at no time in the age period studied did the children show a preference for buildings, pictures, or works of art. A few sex differences were apparent. Girls showed a greater preference for flowers, landscapes, toys, pictures, and clothes than did boys, while boys, on the other hand, preferred animals and things made more often than girls did. A similar study was made by Blonsky (1932) with the use of a questionnaire given to children ranging in age from six years to maturity. To the question, "What do you consider the most beautiful?" 99 per cent of the group said flowers, trees, landscapes, works of art, and human beings. With increase in age, landscapes, rivers, brooks, and views of the sea became more popular, while flowers, trees, forests, parks, and gardens were less popular.

Appreciation of the beautiful was tested by Drought (1929) with a battery of nine sets of pictures, having five in each set, one of which embodied all the important principles of art, while the other four violated these principles. The children's responses to these pictures showed that sensitivity to good art increases with education and general training. Violation of unity proved to be less annoying than violation of harmony and proportion. A similar study was made by Berliner (1918), who had school children rank picture cards according to the aesthetic value of the

pictures, and the results were then compared with the rankings of college students. A high uniformity in the group taste of the school children was found, but there was an absolute break between it and that of the college group. This was due, Berliner explained, to age differences and not to some other factor, such as social status.

Reasons for Aesthetic Perceptions. In order to discover why children like certain art forms and dislike others, attempts have been made to get information about their preferences by asking them questions about the reasons for their likes and dislikes. The reasons for liking certain pictures, Lark-Horovitz (1937) found, were, first, the subject or content of the picture and, second, the color qualities. Children of average intelligence emphasized the subject itself, the reality in presentation, and the colors. Gifted children, by contrast, were influenced more by design and color of the picture and the knowledge, through analysis, which they gathered from it. Their appreciation was more of an emotional and imaginary character than was that of the children of average intelligence.

The reasons given by children from the fourth through the sixth grade for liking certain pictures, Lucio and Mead (1939) reported, were as follows: the artist's use of color, individual interests of the children, the way the picture was made, and its being reminiscent of familiar things. The elements which seemed to interest the children least were having the picture tell a story, and action.

The type of picture that appeals to a child is dependent partly upon the age and intelligence of the child. Because younger children identify themselves with the hero or the things the hero is liable to do, Lark-Horovitz (1938) discovered, the attributes, not the facial expression, of the person shown in the picture are of primary importance. By contrast, older children identify themselves with individual character traits shown in the facial expression of the picture.

In an analysis of empathic responses, or "feeling oneself into" the perceptual object, Walton (1936) noted that these responses may manifest themselves in the reactions of kindergarten children. Bodily reactions accompany the empathic response, as revealed in bodily tension and facial expressions. Young children show a tendency to think in terms of pleasantness-unpleasantness but, as they grow older, they add other dimensions until a large range of responses is acquired.

The influence of intelligence on aesthetic perception has been noted by Lark-Horovitz (1939). Gifted children, she found, select patterned textiles on the basis of technique, line and shape, texture, and originality. They thus stress aesthetic qualities and reduce the importance of personal associations of various kinds. Children of average intelligence, by con-

trast, make their choices in terms of general, personal, and associative qualities.

Color Preferences. Experimental investigations of color preferences have been numerous. Attempts have been made to discover what color or colors children of different ages prefer as a criterion of aesthetic perception. In some of the studies, children are asked to list, in order of preference, their "favorite" colors; in others, their preferences are indicated by checking a list of colors; while still other studies use color samples, in the form of colored papers or materials, from which the child can select the colors he considers most beautiful. Regardless of which of the three methods is used, the results have been found to be very similar. At one age, there is a definite preference for one or two colors, while at later ages other colors stand in first position. The change in color preferences from one age to another is influenced by the cultural patterns of the group which the child learns from his contacts with the group.

Before a young child can show color preferences, he must be able to distinguish colors and hues. Just when he is able to do this has been investigated by Staples (1932), Woolley (1910), and Cook (1931). Staples presented colors on a gray background to babies, two months to two years old. When the babies were too young to grasp the colors, the time they took to look at the colors, as contrasted with the time they looked at gray, was used as an indication of their ability to perceive color.

In the case of older babies, colors were presented for grasping. By the end of the third month, the babies looked at the colors twice as long as at gray, but there was no significant difference in their responses to red, green, blue, and yellow. From the age of six to twenty-four months, however, the babies responded differently to the different colors. The order of preference was red, yellow, blue, and green. There was a fairly close agreement in color preference at this age. After two, yellow steadily lost its preference value, while blue and green attained a higher rank. A slight sex difference appeared, in which girls showed an earlier interest in blue and green than did boys.

Woolley (1910), in a study of the color preferences of one baby, noted that when brilliant rose-pink and dull-blue rattles were shown to the baby, no preference was noticeable until the middle of the sixth month, when a preference for the pink rattle appeared. By the end of that month, it was decidedly the favorite. Woolley studied color preferences further, by using colored papers in pairs and having the baby reach for the color preferred. She noted a marked preference for red, an attitude of indifference to green, and no real preference for yellow as compared with blue. Color discrimination, Cook (1931) discovered, appeared by the age of two years, when young children could match with 45 per cent

accuracy color specimens which differed in hue, brightness, or saturation. By the time they were six years old, they could match the colors with 97 per cent accuracy. At every age tested, the children were able to discriminate more accurately between differences in either brightness or saturation.

Color preferences of kindergarten children as compared with those of college students, Dashiell (1917) reported, showed blue to rank in first place, closely followed by red, while last place was given to orange. Preferences, however, were very slight at this age as contrasted with a much more definite order of preference among college students. The rank of preference was almost the same for both age groups with the exception of green and yellow, where the order of preference was reversed. Among the kindergarten children, sex differences were apparent, especially in the second favored color, which was red for boys and violet for girls. Garth and Porter (1934) in a study of color preferences of children up to seven years of age, found that white was least liked and yellow next to last. Red stood at the top of the list, with blue next. For boys red proved to have the greatest affective value, while for girls blue stood first, with red running a close second.

Studies of color preferences of school children have shown that, as the child grows older, changes occur in his taste for different colors. Katz and Breed (1922) reported that blue was the most frequently preferred color at every age from five to fifteen years, with green a distant second, red a close third, violet and yellow next, and orange the least pleasing. There was a loss in popularity of yellow and orange and an increase in popularity of green as the children grew older. Young children from the poorer districts showed a greater preference for red than did those from the better districts, but this difference decreased with age. Almost identical changes occurred among the English school children studied by Winch (1909).

In a study of colors chosen for finger paintings, Blum and Dragositz (1947) noted that green was the most common first choice of the first graders and the sixth graders, but that blue and red held relatively high positions in popularity for children in both grades. As was true of the earlier studies, a decrease in preference for yellow was noted as the children grew older. Black was also found to be unpopular.

The younger the child, the more pronounced is the preference for saturated colors. No color is too bright to please him, whether it be used in clothing or toys, or merely as a sample in a test. Pastel shades and soft hues are perceived as ugly by young children. With increasing age, however, this attitude changes. By adolescence, both boys and girls show a marked tendency to prefer the duller shades and less saturated hues, and they regard the saturated colors as "loud" or "hideous." The

reason for this change in attitude may be traced to the influence of training. This is apparent in contrasts between adolescents of superior social, cultural, and educational groups and those of less favored groups. In the case of the latter, preference for well-saturated colors is similar to that of children of the younger ages.

Color preferences for different textiles, Lark-Horovitz (1939) stressed, reveal age differences. Younger children, she found, are attracted to textiles by brightness, variety of color, and favorite colors. This holds true up to the age of ten years. Favoritism in colors begins to decline sharply after nine, after which age few children mention favorite colors. The older children preferred fewer colors in more subdued and delicate shades.

Preferences for certain color combinations, Dashiell (1917) noted, are very indefinite among young children. Red-green and red-blue combinations are the favored ones, while orange-green is the least favored. Among college students, on the other hand, red-blue and yellow-violet combinations stand out as favorites, while, like children, the college students regard the orange-green combination as the least attractive. At every age, more pronounced individual differences occur in preferences for color combinations than in preferences for individual colors. This is due, to a large extent, to the different associations various individuals have with color combinations.

Music Appreciation. Liking for music on the part of young babies is apparent from the fact that they like to be sung to or to hear music, even before they are a year old. Many emotional outbursts or painful experiences are quieted by means of music. From their early association with music, they learn to like certain types rather than others. Because the songs and music which a young child first hears have a definite "tune" or rhythm, the child learns to like music of that type and prefers it to music which lacks a definite tune. By the time he is three, the young child has definite preferences for certain types of music and has his "favorites" within each type. The more often he hears his favorites, the more beautiful they are to him. With each succeeding year, his affection for the old and familiar increases, and this is an important factor in determining his standard of what is beautiful in music.

In addition to the role played by association in aesthetic perception in music, understanding of meaning is also important. By kindergarten age, the child can discriminate pitch and intensity with a fair degree of accuracy, can pitch his voice when a model pitch is given, and can march in tune to the rhythm of music. Dashiell (1917) judged kindergarten children's music appreciation by their preference for tone intervals or harmonies and compared the results with those obtained from studies of college students. The intervals used were major third, major seventh,

major fifth, octave, and minor second. While college students reacted almost unanimously to the different harmonies as pleasant or unpleasant, the children showed a great variability in their likes and dislikes for each interval, with no evidence of clear-cut preference. This difference, Dashiell believed, arose from differences in training.

8. Perception of the Comic

Nothing is comic of its own accord. Whether we perceive something to be comic or not depends to a large extent upon the meanings we associate with it. Like all other types of perception, perception of the comic is dependent to a large extent upon past experiences and upon how the memories of these experiences are associated with new experiences. In addition, reactions to comic situations depend upon the mood and emotional reactions of the individual at the time when the comic situation appears. A child, during a temper tantrum, can see nothing funny in a situation which, under normal conditions, would seem to be very funny. Similarly, the health of the child influences his ability to perceive the comic element of a situation.

Harms (1943) has recognized three stages of "juvenile humor" which appear before it reaches maturity. These he described as follows:

1. *Humor as pleasure*, which is characteristic of the first three years of a child's life, and is expressed in direct response to any pleasing approach, such as tickling.

2. *Humor as funniness or curiosity*, which appears at the third year and expresses itself in laughter when anything appears funny to the child—as anything strange or unusual, whether it be the feeble walk of an old person or the abnormal size of a nose.

3. *Humor as comic and caricature*, beginning at the school age. By that time, the situation that gives rise to humor is no longer that of the unusual or the strange, but one that is comical in which they may be involved, or which they may witness—for example, a fat woman trying to pass through a small gate or a boy in farm clothes walking barefoot down Fifth Avenue in New York City. Incongruous situations produce the humor at this age.

Perception of Comic at the Preschool Level. What young children perceive as comic has been carefully investigated. Fenton (1925), in a study of her own baby, made a month by month record of the different things which called forth laughter. She reported, for example, that at the age of four months vocal play amused the baby greatly, while at six months the baby enjoyed tormenting the people who dressed him, blowing bubbles in water given to him to drink, or dropping things handed to him. At the age of nine months, his perception of the comic included watching things fall, as watching the splash made by milk as it falls

from his mouth to the floor; at twelve months, making funny faces; at fourteen months, hiding from people and laughing when they looked for him; and at twenty-four months, trying to squeeze through narrow places or carry out different kinds of stunts.

Observations of nursery-school children, over a period of several months, led Kenderdine (1931) to conclude that the following situations were the ones that most frequently produced laughter in young children:

1. Motions made by the child himself, by others, or by objects.
2. Noises made by the child himself, by others, or by objects.
3. Socially unacceptable situations.
4. Grimaces made by the child himself or by others.
5. Inferiority in others.
6. Pleasure of the child in an occupation or accomplishment.
7. Situations showing appreciation of humor.
8. Word play.
9. Imitative laughter.
10. Situations involving make-believe.
11. General well-being and happiness.

Which of the common laughter-producing situations most often calls forth laughter in preschool groups was investigated by Justin (1932). In Table LIV are given the percentages of laughter responses for the different age groups:

TABLE LIV. PERCENTAGE OF LAUGHTER RESPONSE OF CHILDREN TO TOTAL SITUATIONS AND TO EACH OF THE SIX MAIN DIVISIONS

Situation divisions	Three years old		Four years old		Five years old		Six years old	
	Smile and laughter	Laughter	Smile and laughter	Laughter	Smile and laughter	Laughter	Smile and laughter	Laughter
1. Surprise-defeated expectation	85.83	11.67	93.75	8.33	94.17	23.75	90.41	10.83
2. Superiority-degradation	40.67	9.83	53.17	7.00	69.17	19.33	62.67	10.83
3. Incongruity and contrast	56.25	15.63	72.92	11.46	89.06	33.85	84.38	28.64
4. Social smile as a stimulus	91.67	12.50	95.83	4.17	91.67	20.83	91.67	8.33
5. Relief from strain	47.92	4.17	52.08		54.17	4.17	41.67	2.08
6. Play	56.25	4.17	65.10	5.73	80.73	22.40	72.92	4.69
Total	54.86	10.03	66.13	7.41	78.32	22.22	72.30	12.19

Source: JUSTIN, F. A genetic study of laughter provoking stimuli. *Child Developm.*, 1932, **3**, 127. Used by permission.

As may be seen from the material just presented, the social smile at almost every age was the best stimulus to smiling and laughing, surprise second best, incongruity third, play fourth, superiority fifth, and relief from strain the least effective. In the case of incongruity, superiority, and play situations, laughter became greater as age increased. In the other three situations, age differences were small. The general trend consisted of an increase in responsiveness to the fifth year, followed by a slight decrease in the sixth year. No marked sex differences appeared in responsiveness to laughter-provoking stimuli, though boys laugh more than girls, while girls smile more than boys.

Kimmins (1928) noted that the preschool child laughs at the funny antics of domestic animals, at anything of an incongruous character in the home, and at the minor misfortunes of others. At the end of the preschool age, there is a beginning of play with words. Verbal humor gradually supplements visual humor, and the child laughs as often at what he hears as at what he sees. He finds unusual combinations of words especially amusing, such as "Peter Piper picked a peck of pickled peppers," and "A noisy noise annoys an oyster." Soon the child begins to make puns and laughs at the way he can associate similarity of sound with contrast of meaning.

When Piret (1940) asked children, three to eight years of age, to draw something funny and to tell what was funny in this drawing, he found that two classes of comic motifs appeared in the drawings. The first derived its comic element from characters by addition, suppression, and alteration (changes of size, shape, and color) and from transfer (from man to beast, or vice versa). The second source of comic effect was in situations and behavior (absurdities and mishaps). Appreciation of the comic, he found, develops *pari passu* with intellect, though a playful attitude of mind seems to be required for its appearance.

The relationship of intelligence to laughter has been studied by Kenderdine (1931). In the case of 16 nursery-school children with I.Q. scores ranging from 100 to 130, the average I.Q. was 118.06 and the average number of laughs, 4.7. Ten children with an average I.Q. of 140.6 were found to have an average number of laughs of 13. Kimmins (1928) reported that humor correlates very highly with intelligence. This is true of every age and not of the preschool years alone.

Development of humor, Laing (1939) stressed, runs parallel with general intellectual and emotional development. In the youngest group he studied, the seven- to ten-year-olds, the outstanding causes of laughter were deviations from the normal and conventional and incidents involving someone's discomfort. This second type was the most frequent cause of laughter in the slightly older group (eleven- to thirteen-year-olds). In

both groups, humor was predominantly visual, and verbal wit was little appreciated.

Perception of the Comic in Later Childhood. What the older child perceives as comic was investigated by Kimmins (1928), who had several thousand children write accounts of the funniest stories they had ever read or heard, the jokes which had made them laugh most, and the sights which they considered to be the most comical. The accounts given by the children revealed some interesting points. At the end of childhood, from approximately 11½ years to the end of the thirteenth year, there is a marked decline in verbal humor, while funny sights still make their appeal. Or, expressed in a different way, childish funny sights retain their popularity longer than the funny stories that deal with similar material.

From the ages of seven to ten in girls and eight to ten in boys, riddles are regarded as the favored funny stories, but their popularity declines at eleven years. Children laugh at the misfortunes of others, at mistakes made in examinations when they know the answers, and at entertainments in theaters, movies, and circuses. Hall and Allin (1897) listed, as other sources of perception of the comic in children, recovery from slight fear, making faces, caricatures, practical jokes, immodest things or reference to them, religious sanctities, people who defy authority, and people in predicaments.

Comedy films appeal greatly to children because in them the actors do things which the child would like to do but which he knows he would not be allowed to do. If he attempted to do them, he would be punished, while the wrongdoer on the screen "gets away with it." The appeal is especially great if the pranks played by the actors have settings similar to that of the child's environment and if the practical jokes are played on personages resembling the persons who have authority over the child, such as a nurse, a teacher, or a parent.

Brumbaugh and Wilson (1940), by means of a *Funny test*, in which children were asked to indicate what they thought funny, investigated perception of the comic in children from grades 3 to 6. The children were asked to mark three answers to each question, three samples of which are

I. *The funniest people in the movies are*

1. Betty Boop.
2. Charlie Chaplin.
3. Donald Duck.
4. Eddie Cantor.
5. Joe E. Bown.
6. Joe Penner.
7. Laurel and Hardy.
8. Marx Brothers.
9. Martha Raye.
10. Mickey Mouse.
11. Mae West.
12. Popeye.
13. Ritz Brothers.

IV. *Children make me laugh when they*

1. Act in school plays.
2. Are stupid.
3. Fight.
4. Get punished.
5. Laugh, so I laugh too.
6. Make faces.
7. Make mistakes.
8. Make noises.
9. Stutter.
10. Talk out in school.
11. Tell jokes or riddles.
12. Tickle me.

XVII. *Draw a funny picture. Tell why it is funny.*

From the list given, the 20 items considered funniest were selected, two or three from each question of the checked list. The change in the children's attitude from grades 3 to 6 was then studied and the percentages of selection, given by the children for what they thought especially funny, were summarized in the following table:

TABLE LV. THINGS THOUGHT THE FUNNIEST BY BOYS AND GIRLS IN GRADES 3 AND 6

Things considered funny	Grade 3		Grade 6	
	Boys	Girls	Boys	Girls
Little or no change:				
Charlie McCarthy	18	23	21	22
Very fat	21	23	19	20
Make faces	16	18	18	20
Teacher tell funny stories	16	18	15	18
Teacher tell joke	17	15	12	17
Dunces	14	13	17	14
Decreasing funniness:				
Children tickle	30	30	17	24
Big ears	27	23	21	17
Grown people tickle	21	22	13	17
Donald Duck (comics)	21	13	9	5
Teacher read funny stories	16	16	12	13
Big noses	19	18	16	16
Grown people kiss	24	22	13	8
Increasing funniness:				
Clowns	21	24	26	27
Children tell jokes	17	17	29	27
Katzenjammer Twins	17	13	22	25
People wear funny hats	7	10	13	21
Laurel and Hardy	7	6	22	18
Ritz Brothers	10	10	19	18
Burns and Allen	9	11	12	19

Source: BRUMBAUGH, F., and WILSON, F. T. Children's laughter. *J. genet. Psychol.*, 1940, **57**, 27. Used by permission.

The results presented in Table LV show that simple things which have little meaning, such as being tickled or seeing people with big ears a

noses, decrease in funniness as the child grows older, while the items that show increasing funniness have more meaning as children grow older.

Errors in Perception

In the observations of his environment, the child very often misinterprets what he observes. He may see, hear, smell, taste, or feel correctly, but the error in observation results from the association of wrong meanings with what he has observed. Unless the errors are corrected soon after they occur, the association, through repetition, becomes firmly established and, as a result, faulty concepts are developed. Misconceptions formed early in childhood are especially serious because they are often not detected by adults until they have become so firmly established that it is difficult or, in some cases, impossible to eradicate them later.

Causes of Misconceptions. Errors in perception, resulting from the association of faulty meanings with what has been observed, may be traced to a number of causes, the most important of which are the following:

1. *Faulty information,* resulting from what the child has been told or what he has read. When parents, for example, are not certain about the correct answer to the child's question, they may "make up" an answer, so as to satisfy his curiosity; they may give him information which they sincerely believe is correct but which is erroneous in one respect or another; or owing to preoccupation with other interests, the individual questioned may misunderstand the child's question and answer it as he thought the child had asked it. Or the child's information may be faulty because he has read material from unauthoritative sources or from books which are out of date so that the material given in them has been disproved by recent discoveries.

2. *Superstitious beliefs,* handed down from generation to generation and accepted in an unquestioning manner by the child, frequently give rise to misconceptions. In a comparison of superstitious with nonsuperstitious children, Ter Keurst (1939) found that the superstitious children came from homes of an inferior level as compared with those of nonsuperstitious children. Children who are unable to cope with their problems or to compete successfully with their fellows, he observed, tend to interpret their world of affairs in animistic terms. The nonsuperstitious children were found to have fewer neurotic tendencies; they were less introverted and submissive and more self-sufficient than the superstitious group.

In a study of Negro elementary-school children, Peatman and Greenspan (1935, 1936) found that the children believed at least one-half of the 35 superstitious beliefs given on a questionnaire. The girls proved

to be more superstitious than the boys. For boys, a progressive decrease was noted in the average frequency of superstitious responses with increase in age, while for girls, there was a progressive increase with increase in age.

3. *Misunderstanding of words* used in explanation to the child. Since the young child's comprehension is limited, because of his limited vocabulary, he may misinterpret the meaning of the words used by others in explanation of material about which he is seeking information.

4. *Faulty reasoning* may cause misconceptions. When two objects or two words are alike in one or more aspects, the child concludes that they are alike in every way. As a result, he establishes misconceptions based on conclusions drawn from too limited data.

5. *Vivid imagination* in the form of dreams or daydreams may lead to conclusions not justified by the data available. In developing his concepts, the dreamer supplements data obtained from actual experiences with data of a purely imaginary sort. Many of the "white lies" of early childhood can be traced to misconceptions from this source.

Hall's Study. One of the earliest and, at the same time, one of the most important investigations of the accuracy of the child's concepts of objects or experiences in his everyday life was made by G. Stanley Hall (1891). With the aid of teachers trained for the task, Hall asked Boston school children, in September of the year they started school, a number of questions and then recorded the answers given. Several years later, a similar study was made in Kansas City, during the spring months, and the results of that study were combined with Hall's. In Table LVI are given a few of the misconceptions of young children at the time when they entered school.

From the data just presented, it is apparent that young children, when they enter school, have more faulty information than one would expect. The lower percentages given for the Kansas City children than for the Boston children may be explained largely by the fact that the study was made after they had had the advantage of more than half a year of schooling. Hall inferred, as a result of this study, that there is little knowledge which the teacher can assume the child to possess at the beginning of his schooling, and that the concepts most common in children of a given locality are acquired first, while the rarer ones are acquired later. Children from better neighborhoods, as a rule, have fewer misconceptions than do children from the poorer districts, owing primarily to the more accurate information the former group receives as compared with the latter.

Huff (1927) followed along the general lines of the study made by Hall to discover the percept content of the minds of children from kinder-

garten to high school. The weakest percepts, Huff reported, were as follows: in 45 to 49 per cent of cases, errors occurred in the percepts of growing wheat, hoe, source of sugar, beach, and what makes the clock go; 40 to 44 per cent, in the case of beehive, growing grapes, source of silk, island, and water in faucet; 35 to 39 per cent, in the source of copper wire

TABLE LVI. CHILDREN'S MISCONCEPTIONS

Name of the object of conception	Percentage of children ignorant of it		
	In Boston	In Kansas City	
		White	Colored
Beehive	80	59.4	66
Squirrel	63	15	4.2
Frog	50	2.7	
Cow	18.5	5.2	
Growing wheat	92.5	23.4	66
Growing strawberries	78.5	26.5	1.1
Growing potatoes	61		
Location of lungs	81	26	44.6
Right and left hand	21.5	1	10.2
Stomach	6	27.2	45.9
Dew	78	39.1	70.2
Moon	7	26	53
River	48		
Triangle	92		
Green	15		
Origin of leathern things	93.4	50.8	72.3
Origin of bricks	81.1	33.1	53
Origin of meat (from animals)	48	8.3	12.7
Source of milk	20.5	4	

Source: HALL, G. S. The contents of children's minds on entering school. *Ped. Sem.*, 1891, **1**. Condensed from pp. 139–173. Used by permission.

and gas in the stove. When different factors influencing the child's percepts were examined, Huff concluded that the most important single factor was environment, as shown by the fact that the percepts best known were contiguous to all children, while those least known were not part of the experiences of the children.

Illusions. Illusions are errors of perception of a large and unusual type. In them, the individual associates wrong meanings with what he observes, and hence the source of error is in association rather than in observation. While all individuals are, at some time or other, subject to illusions, young children are especially susceptible to them because

the young child lacks the critical attitude that is usually found in older children and adults. As a result of this, the child may readily associate completely wrong meanings with what he observes, without realizing how incongruous this may be.

Laboratory studies of illusions in children show how erroneous their observations sometimes are. Using a series of brass tubes of different sizes but of the same shape and weight, Dresslar (1894) asked children to arrange them in the order of their weight. More than half of the children arranged the weights in the exact order of their size. The illusion was very large when the child was asked to judge the weights to be placed in the position of the heaviest or the lightest. When children, from grades 4 to 8 and university students were asked by Wolfe (1898) to reproduce from memory, on paper, the size of familiar coins, such as a quarter or a dime, it was noted that young children rather consistently underestimated the sizes, while adults seemed to overestimate them.

Variations in Errors. While it is true that all perception is subject to error and that the extent of the errors is closely related to the age of the individual, there are nevertheless errors within each age group, depending more upon what is observed than upon the abilities of the subject to observe or the opportunities he has had to acquire information. As a general rule, it may be said that the more subjective the perception, the more influenced it is by personal bias or prejudice, which, in turn, results in faulty concepts. Objective facts, on the other hand, may be observed incorrectly because of insufficient knowledge on the subject's part to enable him to perceive them correctly.

Specific illustrations will clarify this point of view. If the child's concepts of rain, the origin of butter or God, or the function of the heart are incorrect, one may be certain that in most instances the misconceptions are caused by faulty or inadequate information, which the child has acquired from his contacts with others or from reading. Faulty concepts about the self, on the other hand, are not caused by faulty information but rather by personal bias. The child, like the adult, prefers to think of himself as he *would like to be*, with traits and characteristics that are approved by the social group. If asked, then, to judge himself, he will do so in terms of the ideal self rather than in terms of the real self. This Hurlock (1927*a*) noted to be the case when school children were asked to check one word in each pair that more nearly described him, such as:

Careful.....	Careless
Daring.....	Ambitious
Patient.....	Impatient
Generous.....	Stingy
Cowardly.....	Brave

TABLE LVII. PERCENTAGE OF FREQUENCY OF CHOICE OF UNDESIRABLE DESCRIPTIVE TERMS

Undesirable traits	Percentage of terms chosen	
	Boys	Girls
Careless	8.5	14
Daring	23.7	6.1
Unambitious	3.3	.9
Selfish	1.9	5.6
Tardy	5.2	1.8
Bad tempered	12.8	13.2
Inaccurate	4.7	7.7
Lazy	1.4	1.9
Vain	5.2	4.7
Changeable	12.3	9.9
Indifferent	3.2	.9
Yielding	2.8	5.2
Distrustful	1.9	.9
Cowardly	0.9	1.9
Stupid	0.9	1.9
Bad memory	6.1	4.2
Self-distrustful	2.8	2.8
Hasty	12.3	10.4
Unobservant	2.8	2.3
Unsociable	3.3	3.3
Disorderly	4.1	2.8
Gloomy	2.3	4.3
Impatient	10.9	7.1
Slow in thought	7.1	7.0
Slow in movement	4.2	2.3
Holds a grudge	2.9	3.3
Fond of fight	15.1	7.1
Extravagant	7.1	4.7
Proud	35.5	17.0
Stingy	0	0

Source: HURLOCK, E. B. A study of self-ratings by children. *J. appl. Psychol.*, 1927, **11**, 490–502. Used by permission.

A small group of adults was then asked to analyze the list of descriptive terms and mark the work in each pair which the child, because of home or school training, would be apt to consider undesirable. In Table LVII are given the percentages of undesirable responses for both boys and girls.

Of the 12,690 responses made by a group of 423 children, only 763, or 6 per cent, were related to socially undesirable traits. Of these, *proud*,

daring, and *bad tempered* were chosen most often and *stingy*, *distrustful*, and *cowardly* the least. Boys, on the whole, tended to mark more of the socially undesirable traits than did girls. There seemed to be a decided tendency for the children to overestimate the presence of traits which are socially desirable and to underestimate the presence of socially undesirable ones. This tendency is more pronounced as children grow older and become increasingly aware of the opinions of others.

Self-appraisals by self-ratings made by children, which were then compared with teachers' ratings, were analyzed by Tschechtelin (1945). He found that, in the case of children from grades 4 to 8, boys showed a distinct tendency to underrate themselves. This became progressively true as the boys grew older. Girls, on the other hand, in all grades rated themselves higher than they were rated by the boys, girls, or teachers. This raised the question as to whether they were actually better adjusted than the boys, or whether they thought themselves better, or whether they were merely overcompensating.

CHAPTER XII

MORAL DEVELOPMENT

THE NATURE OF MORALITY

Morality is conformity to the moral code of the social group. The term comes from the Latin word *mores*, meaning manners, customs, or folkways. To act in a moral way means, thus, to act in conformity to group standards of conduct. Immorality is failure to conform or behavior directed against the interests and welfare of the group. Unmoral or nonmoral behavior, on the other hand, is behavior which, even when unfavorable to the group, is so, not because of intended harm on the part of the individual, but rather owing to ignorance and lack of knowledge of what is socially approved.

Morality may vary from one group to another, depending upon what has been accepted by the group as the socially approved form of behavior. Even within a community, different social classes often have their own individual codes of approved behavior which differ markedly from those of the other social classes of the same community. Moral behavior, thus, is a matter of what the group to which the individual belongs believes is right and therefore gives its approval.

According to Breckenridge and Vincent (1943), basic to good moral growth are these six essentials:

1. As good physical health as possible.
2. Emotional security, a sense of being loved and wanted, of companionship and sharing.
3. Adequate occupation and avenues for the expression of adventure and excitement and excitement along wholesome lines, so that he is not driven to being "bad" for excitement or freedom from boredom.
4. Continued discipline in self-control, so that he becomes able in increasing measure to curb childish impulses.
5. Continually widening social horizons, so that his ability to know, to tolerate, to sympathize, to understand, and, therefore, to genuinely consider the rights and privileges of other people will constantly develop.
6. The inspiration (usually provided by religious training) to desire the right strongly enough to find sincere satisfaction in doing it. (Page 470)

Morality Is Learned. The baby is neither moral nor immoral. He is nonmoral in the sense that his behavior is not guided by moral stand-

ards. Before he can behave in a moral way, he must learn what the group to which he belongs believes to be right or wrong. This he will learn gradually through the childhood years, partly from the teachings of parents, teachers, or others in authority, and partly from imitating the behavior of those with whom he most often comes in contact.

No child can be expected to build up a moral code of his own. He must be taught the standards of right and wrong as they are handed down from one generation to another. He must learn the moral concepts which the social group has found to be useful through successive years. It must not be left to his discretion to decide what is right or wrong, nor should he be permitted to act as he pleases, without considering the group.

The lawmakers set the pattern for the moral behavior of the child. Parents and others who are responsible for the guidance of the child's development must then help the child to learn to conform to this pattern. If the socially acceptable pattern of behavior is accompanied by satisfaction, it will be repeated and in time become habitual. Eventually, with proper guidance and training, the child should conform to moral standards of right without external force. It is desirable that the child's behavior be voluntary rather than dominated by force. This can be accomplished only after the child has learned to distinguish between right and wrong and has built up a desire to do what the group considers right, because of anticipated social approval or reward.

True Morality. True morality is behavior which conforms to social standards and which is also carried out voluntarily by the individual. It comes with the transition *from external to internal authority* and consists of conduct regulated from within. It is accompanied by a feeling of personal responsibility for the act. Added to this, it involves giving primary consideration to the welfare of the group, while personal desires or gains are relegated to a position of secondary importance. Because true morality is so highly developed and so complex, it is rarely found in children. It should appear during the adolescent years, but whether it does so or not will depend to a large extent upon the type of moral education the child has been given.

Moral development of the highest type involves two aspects, the *intellectual* and the *impulsive*. The child must learn what is right and what is wrong, and as soon as he is old enough he must understand why it is so. In addition to this, he must develop the desire to do what is right, to act for the common good, and to avoid wrong. This can be accomplished most successfully by associating pleasant reactions with what is right and unpleasant reactions with what is wrong. To ensure his willingness to act in a socially desirable way, the child must receive the approval of the group. In addition to that, he must have plenty of

opportunities to take part in group activities, so that he can learn what the group expects.

PHASES OF MORAL DEVELOPMENT

Moral development has two phases, separate and distinct, but both essential if true morality is to be attained: (1) *the development of moral behavior* and (2) the *development of moral concepts.*

Moral knowledge does not guarantee conduct consistent with it. Hartshorne and May (1928*a*), working with elementary-school children, and Jones (1936), with junior-high-school students, reported correlations of approximately +.25 between moral knowledge and conduct. This means that you can predict with only a small degree of accuracy from a child's moral knowledge what his conduct will be. It is true, however, that moral conduct cannot precede the development of moral concepts.

1. Development of Moral Behavior

It takes a young child many years to learn to act in a manner approved by the social group. The whole purpose of discipline is to teach the child what is right and to see to it that he acts as society expects him to act. If discipline has been of the right type and if it has been used consistently, instead of in a haphazard manner, ethical conduct sooner or later becomes habitual. When pleasant associations, in the form of praise, social approval, and reward, are tied up with socially desirable behavior, ethical conduct is learned more quickly than it otherwise would be.

Teaching the child what is right and wrong is not enough. He may, as a result of teaching, have a wide fund of moral concepts, but he cannot be expected to apply his moral knowledge to meet concrete experiences in everyday life. For that reason, he must be guided in the development of habits of action. The child may know, for example, that it is wrong to cheat in school, to take money from the mother's pocketbook, or to lie in order to escape punishment for wrongdoing. But his knowledge is limited to abstract concepts, and he cannot be expected to apply it to specific situations until he is old enough to see of his own accord the relationship between concept and specific situation.

The experimental studies of Hartshorne and May (1927, 1928) (described in detail on page 466) have shown conclusively that young children must learn moral behavior in specific situations, and that they cannot be expected to apply moral concepts, learned in the abstract as "ideals" or "examples," to specific situations. Transfer of knowledge of right or wrong conduct comes only when situations are similar enough for the child to see relationships in them. The correlation between deception score on tests of the same type, as arithmetic and vocabulary

tests, Hartshorne and May found to be +.696 as contrasted with the correlation of +.198 between cheating in school and cheating in athletic contests. These results suggest that moral behavior in children consists of habits learned in special situations which will function only in similar situations.

How Moral Behavior Is Learned. From this we may conclude that learning to behave in a socially acceptable manner follows the same laws as all other forms of learning. The child must *first learn to make correct specific responses in specific situations.* He learns, as a little child, to conform to standards of conduct in the home. Later, when he goes to school, he learns to conform to the school's standards, and when he becomes a member of a play group, he conforms to the standards of that group. Should the standards of the home, the school, and the play group all agree, it will be easy for the child to see the similarity *and thus,* in time, *develop abstract concepts* of right and wrong. If, however, they differ from one situation to another, the child is confused and wonders why he is punished for an act which in another situation was ignored or looked upon as socially acceptable.

Of even more serious consequences, a condition of this sort makes it impossible for the child to develop moral concepts that will hold for the same act in different situations. If, for example, the child is permitted to sneak cake from the cake box or candy from a box which he has been told not to touch, is it surprising that he is confused when he is punished for taking pencils from other children's desks at school or money from the mother's pocketbook? Stealing should be regarded as wrong in every situation and should be punished consistently, if the child is to learn to behave in accordance with the codes of adult society.

Transfer-of-training experiments have shown that transfer comes only when situations are similar. This is likewise true of moral training. When the objective aspects of a situation are the same, transfer can be expected to occur. When they are different, it is questionable whether or not transfer will take place. Will the child, for example, who learns not to take money from a pocketbook transfer this habit to cash registers? The objective features of the two situations are different, and consequently the child may not see the common features of the two, which are so obvious to an adult.

Moral training should therefore involve teaching the child to look for *common features of apparently different situations.* This, of course, involves analysis of a too complex sort to expect in a young child. But the child of eight or ten years of age can be taught that it is wrong to take money belonging to other people, whether it comes from their pocketbooks, from their desks or bureau drawers, or from a cash register. It is

in this way that moral training can lead to the development of moral concepts of a general rather than of a specific sort.

Essential Principles. Learning to behave in a moral way is thus too complex to be left to chance or to the young child's trial-and-error experiences. It involves four fundamental principles: (1) it must be directed along *socially desirable lines;* (2) the child must be *told directly what is right and what is wrong;* (3) as soon as he can understand, he must be told *why* certain things are right while other things are wrong; and (4) there must be a conscious attempt on the part of those who direct the child's behavior to *associate pleasant reactions* with behavior that is *right* and *unpleasant reactions* with behavior that is *wrong.*

In the psychological study of habit building, we know that in the establishment of any habit it is essential that no exceptions be allowed to occur until it is well learned. Now, this is true of moral habits as well as of all other habits. For that reason, moral training must be consistent. The acts that are wrong must be wrong tomorrow as well as today, not wrong one day and right the next. Unless consistency be maintained, the child is sure to be confused. Many so-called "problem children" are the result of inconsistent discipline. The child becomes maladjusted because he does not know what is expected of him.

2. Development of Moral Concepts

The second phase of moral development consists of the learning of moral concepts, or the principles of right and wrong in an abstract, verbal form. This, of course, is too advanced for a young child, and it is therefore necessary to wait until the child has the mental capacity to generalize and transfer a principle of conduct from one situation to another, before he can be expected to learn moral concepts. It is true that language skills make this easier, because concepts are derived from concrete cases. Nevertheless, the child must be mentally mature enough to see the relationship between an abstract principle and concrete cases and to associate these with memory images of specific situations.

The child learns to judge his own conduct as "good" or "bad" in terms of the consequences of his acts. If his training has been of a consistent sort, he soon learns to judge a certain act as "bad" because punishment of one sort or another invariably follows the act. Another act, on the other hand, is judged as "good" because invariably praise or some other forms of social approval accompanies it.

As he grows older, he must learn to judge his behavior in terms of the social consequences, regardless of personal consequences. He thus thinks of how the group will judge his behavior and not how he himself will be affected by them. In the "gang" age, for example, telling tales on the

gang to parents or teachers may give the child a temporary personal satisfaction because it puts him in the limelight. But he soon discovers that the members of his gang regard this with great disfavor, and it therefore becomes a "wrong" thing to do.

Value of Social Contacts. No child can be expected to learn to make moral judgments of a mature type unless he is given an opportunity to do so by associating with others. Through contacts with others, he has an opportunity to see how they evaluate his behavior. It is especially important that he have plenty of contacts with both adults and children who are not members of his family and who will not make allowances for his behavior as members of his family are apt to do. Learning to judge one's own conduct and that of others comes through actual personal experiences and not through moral teaching or "preaching" of right and wrong.

General Moral Concepts. Concepts are at first specific and relate to the specific situations in which they were learned. As the child's capacity for comprehending relationships increases, his concepts of right and wrong in different though related situations merge. As a result, general concepts are gradually learned because the child is able to recognize a common element in a variety of situations. In order to do this, the child must have actual personal experiences with real situations. He cannot be expected to understand general moral concepts if they are taught to him as such and consequently have little meaning because of their lack of association with real experiences.

One of the greatest difficulties the child meets in learning moral concepts comes from the fact that they often vary with situations, and these differences are too subtle for a child to understand. It is very difficult for him to comprehend, for instance, why it is wrong to take a cookie from a box in a store when he is permitted to help himself at the cookie jar at home. Likewise, he cannot understand why it is wrong to take money that has been put in his bank when it is all right to use money from his pocketbook. In both cases, he argues, the money is his.

Experimental Studies of Moral Concepts. A number of experimental studies of children's moral concepts have been made. These have shown that the comprehension of moral concepts is closely related to general maturity and intelligence. Macaulay and Watkins (1926) asked 2,500 children to make a list of the most wicked things anyone could do. They found that, up to the age of nine years, the child's concepts were definite and concrete rather than abstract. They were in terms of the child's immediate personal relationships, such as disobeying mother or hurting the cat. After nine years of age, the concepts became more generalized as, for example, stealing is wrong, rather than it is wrong to steal a ball.

In answer to the questions, Tell me, what is a good girl (boy)? and

Tell me, what is a bad (naughty) girl (boy)? Radke (1946) was able to obtain information about preschool children's standards of good and bad behavior. In Table LVIII are given children's standards of good behavior.

TABLE LVIII. CHILDREN'S STANDARDS OF GOOD BEHAVIOR

Good behavior	Percentage of responses		
	Girls	Boys	Both
Helps mother	20	40	29
Takes care of own routine	13	6	10
Plays gently with toys	28	6	18
Does nice, kind things	13	30	21
Obeys mother	8	6	7
Doesn't destroy or break things	3	3	3
Stays out of mother's way	3	6	4
Miscellaneous and doesn't know	12	3	8

Source: RADKE, M. J. *The relation of parental authority to children's behavior and attitudes.* Minneapolis: University of Minnesota Press, 1946. Abbreviated from table on p. 54. Used by permission.

Table LIX contains a list of the kinds of behavior which, in the conception of a preschool child, are bad or naughty.

TABLE LIX. CHILDREN'S STANDARDS OF BAD BEHAVIOR

Bad behavior	Percentage of responses		
	Girls	Boys	Both
Doesn't do what mother asks	28.0	7.0	18.0
Doesn't do what other people tell him	0.0	14.0	6.5
Does overt act of violence (scratches, hits)	47.0	55.0	51.0
Cries, says bad words, is cross, isn't nice	12.5	17.0	15.0
Makes mother sad	0.0	7.0	3.0
Miscellaneous and doesn't know	12.5	0.0	6.5

Source: RADKE, M. J. *The relation of parental authority to children's behavior and attitudes.* Minneapolis: University of Minnesota Press, 1946. p. 54. Used by permission.

From what sources children's standards of good and bad come was determined by their answers. In none of the answers was there any mention of a deity or of similar authority. The authority most often given for judgments of good and bad was the mother. Good and bad depended, thus, largely on the mother's standards and her responses to the child. The father was rarely mentioned.

Discrepancies between Concepts and Behavior. Experimental studies have revealed that the discrepancy between moral concepts and moral behavior is greater than it is popularly believed to be. Hartshorne and May (1928) found that abstract knowledge of what is wrong did not keep school children from cheating when the particular situation arose in which they were tempted to cheat. In the case of 933 pupils who copied from keys in school tests, 89 per cent stated that they believed it was cheating to copy from the keys. In Fite's (1940) study of nursery-school children's attitudes toward aggressive behavior, there was found to be no consistent relationship between what the children had to say about the "rights" and "wrongs" of aggressive behavior and the degree of aggression they showed toward the children in the playground.

Discrepancy between moral concepts and moral behavior is well illustrated in the case of delinquent children. While these children often know that certain acts are wrong, they persist in behaving in an unsocial way. Bartlett and Harris (1935) found a high correlation in knowledge of accepted moral codes among high-school students and delinquents. When he asked 128 reformatory girls to rank in order of badness 16 bad practices, Weber (1926) found that they showed as much moral insight as was shown by a group of university women used for a control group.

Hill (1935) compared the ethical knowledge of delinquent with non-delinquent boys as measured by a test made up of descriptions of social situations and acts to be rated as "right" or "wrong." Sample items were killing in self-defense; boy quitting school; not paying taxes when able; breaking quarantine; and booing officials at a game. The results showed a high degree of general agreement between ethical knowledge of the offenders and nonoffenders. The general conclusion that may be drawn from studies of this sort is that knowledge of right and wrong is not a deterrent to misbehavior or criminality.

STAGES IN MORAL DEVELOPMENT

The moral development of the child, like other phases of his development, follows a pattern in which certain types of morality may be expected to appear at different periods in the growth of the child. There is no sharp dividing line between the different phases of development. Rather, the development is graded and the transition from one period to another occurs slowly and over a period of months.

Many attempts have been made to divide the moral development of the child into distinct stages. Only three of these will be given as samples. McDougall (1923) has recognized four levels of conduct. These are (1) *Unlearned or instinctive behavior,* modified by the natural consequences of the act. This appears in early babyhood, and partially

throughout life. (2) *Level of reward and punishment,* administered by parents, teachers, and others. This is the level of external control, which extends up to puberty. (3) *Level of social approval and disapproval,* in which group opinion is a powerful motivating force. (4) *Level of altruism,* in which the individual acts for the common good. This is the highest, and the true level of morality.

The five levels of moral development recognized by Piaget (1932) are as follows: (1) *habit level,* in which emotional satisfactions are prominent; (2) *conformity to adult requirements;* (3) *mutual adjustment of equals;* (4) *appreciation of underlying motives;* and (5) *codification of rules, principles, and ideals.* A third attempt to divide the moral development of the child into specific stages was made by Dewey and Tufts (1932), who recognize the three following levels: (1) *behavior motivated by various biological, economic, and other nonmoral impulses and needs;* (2) *behavior following the mores of the group* but manifesting very little reflection; and (3) *behavior based upon individual judgment* and involving criticism of group conduct.

In the analysis of stages of moral development presented below, there will be no attempt to follow specifically any one analysis. Instead, the approach will be to discuss the characteristic moral development in each of the important developmental stages and to stress the progress toward mature moral standards from one age to another.

1. Morality in Babyhood

The baby, as was pointed out in the beginning of the chapter, is neither moral nor immoral. He is *nonmoral.* The old-fashioned religious point of view was that the child was "burdened with original sin" which had to be purged from him by corporal punishment; and some individuals went to the opposite extreme and believed that the baby was born good but was corrupted by worldly influences. Neither point of view is correct. The child is not born with good or bad moral standards. He must learn to act in ways which are judged to be good by the social group and to refrain from doing what the group considers wrong.

To the baby, standards of right and wrong as accepted by the group mean nothing. His behavior is guided by impulse, and he judges right and wrong in relation to the pleasure or pain the act affords him rather than in terms of the good or harm done to others. The baby is too young, intellectually, to realize that an act is wrong unless ill-effects follow. He thinks only of how this behavior affects him personally, and he feels no obligations to modify his behavior because of others, unless his behavior is accompanied by unpleasant consequences.

A "guilty conscience" from wrongdoing is unknown at this age

because it requires the development of definite standards of right and wrong. By the age of three or four years, however, the child whose discipline has been consistent knows what is acceptable, and therefore right, and what is disapproved of, and therefore wrong. Likewise, a sense of duty or obligation to others is lacking. The baby does what pleases him regardless of how it affects others. Nor does he think of doing things to please others. Even though his act may cause distress or pain to another, he has no feeling of remorse.

At this age, standards of property rights are unknown. The baby takes things which please his fancy, regardless of ownership. A toy in a shop or in another child's house may easily be carried off by the baby, should it happen to appeal to him. No thought of stealing enters into the act. Even when he is told not to touch things that belong to others, he forgets when a new and different object arouses his curiosity. The more consistently the baby is told not to touch something because it is "mother's," or not to touch another object because it is "Mrs. Smith's," the sooner he will learn to respect the property of other people.

2. Morality in Early Childhood

From three to six years of age, the foundations of moral conduct and the basic moral attitudes of the social group should become established. At this time, the child is not told why this act is right or wrong, but he is merely told how to act, and he knows that, unless his behavior conforms to standard, he will be punished. Because of his mental immaturity and limited experience, the child cannot be expected to understand the why and wherefore of rules. He can, however, comprehend the magnitude of the various offenses because of the severity of punishment associated with the acts.

The unmoral character of the child's conduct is apparent in the fact that the child conforms to the conduct standards set by his environment, as a means of avoiding social disapproval or punishment, or to gain social approval and reward. This leads him to do what is right without actually knowing why he acts as he does. By the time the child is five or six years old, habits of obedience should be established, provided, of course, that the child has had consistent discipline. If his acts are bad, it is more often from ignorance than from willful disobedience.

Concepts of right and wrong are being established at this age through the association of such words as "good," "bad," "naughty," and "nice" with specific acts. These associations come from rules laid down in the home relating to specific acts and situations. The young child learns that certain forms of behavior are "good," while others are "naughty," and that praise or reward follows the former, while scolding or punish-

ment follows the latter. He soon comes to regard behavior in terms of "good" or "bad," and thus specific moral concepts are established. This shows a definite awareness of the mores of the group, even though the group is limited, for the most part, to his family. The discrepancy between moral concepts and moral behavior is marked at this age. Even though right and wrong are expressed in words, they are often not followed by actions related to them.

The child may rebel against adult authority; he may try to evade the rules of conduct laid down by the adults of his environment; and he may try to test out their authority by attempting to "get away with" forbidden acts; but he does not, at this age, question the justice of the rules. He does not even suggest the possibility of alternatives of the act, as the older child does. He merely obeys or disobeys the rules, but he does not bring up the question of whether or not he will be permitted to substitute an act more pleasing to him for an act which he is expected to perform. If, for example, he has been taught that it is wrong to take home a toy belonging to another child, he either does or does not take it. He never brings up the alternative of "borrowing it for a few days and returning it later."

Before five or six years of age, the child does not feel guilty when he does what is wrong. When caught in a wrong act, the child will become embarrassed, frightened of possible punishments, or will rationalize to explain why he behaved as he did. If, on the other hand, he is not caught, he will not bother about his wrong act, nor will he feel guilty because he has acted in contradiction to what he knows is right.

3. Morality in Late Childhood

The moral code of the older child is determined to a large extent by the moral code of his group. The boy or girl, from six years of age to adolescence, learns to behave as the group expects him or her to behave and conforms rigidly to the group's standards of right and wrong. By ten or twelve years of age, the child can understand the underlying principle and reason for rules. He has the ability to make moral discriminations, and he has a large fund of verbal morality, or learned concepts of right and wrong as they relate to different situations. He lacks true morality in that he is unable to judge for himself whether an act is right or wrong but must rely on what he has learned in regard to it.

The older child, provided the basis of morality has already been established, has a strong sense of justice and honor. He believes that it is wrong to lie, to carry tales, to be cowardly, to abuse the small or weak individual, to take things belonging to others, or to betray one's friends. He is contemptuous of those who lie, cheat, or steal, if his group believes

such acts to be wrong, and his standards of honor are rigid and unalterable. He will strongly condemn anyone whose behavior falls below his standards of morality, and his contempt for the transgressor is expressed in no uncertain terms. His attitude toward those who do not conform is one of pronounced intolerance.

The older child's attitude toward laws was studied by Lockhart (1930, 1930*a*) in the case of boys and girls from grades 4 to 12, and 50 adults, by means of a law-attitude test. Lockhart found that children's attitude gradually approached the adult attitude as they advanced through the grades. Sex and socioeconomic status proved to be of no consequence in producing differences in the attitude toward law. A lawless attitude, he found, was a problem of the individual and not one of social, economic, or intellectual level.

While condemning others for violating rules, the older child will often question the justice of the rules. Should the gang leader take the position that a certain rule is "unfair," the gang as a whole will take sides with him, and a stormy protest will be the outcome. The gang will then champion the cause of the offender, and treat him as a martyr who has been subjected to unfair treatment.

Conscience is self-censorship. The child learns to censor his own behavior by standards of conduct he has learned from the social group, children as well as adults. When the conscience has developed to the point at which it functions actively in controlling the child's behavior, his conduct is then regulated by inner standards, not by external controls and rules fixed by others.

Lerner and Murphy (1941) report that children from eight to twelve years of age are governed by a double basis for morality. They have, for example, different standards for obedience to mother than for obedience to father. According to them, it is worse to lie to your father than to your mother, because your mother "understands you better" and is "sweeter," therefore you do not want to "let her down." Because your father can "punish harder," you try to avoid disobeying him.

According to Eberhart (1942), recognition of the existence of property rights on the part of children develops early and is in workable shape at the six-year-old level. Between the first and third grades, rapid progress is made in evaluating the seriousness of stealing. After that, progress continues, but more slowly. McGrath (1923) likewise reports that six-year-old boys can diagnose a stealing situation as "stealing" with the same facility as adults.

DISCIPLINE

Discipline means training to conform to accepted standards of behavior. This consists of guiding the activities of the individual into desirable

channels through positive motivation and inhibiting undesirable activities through negative motivation. It is necessary to train the child to suppress socially undesirable motives, as fighting and stealing, while at the same time encouraging the development of socially desirable ones.

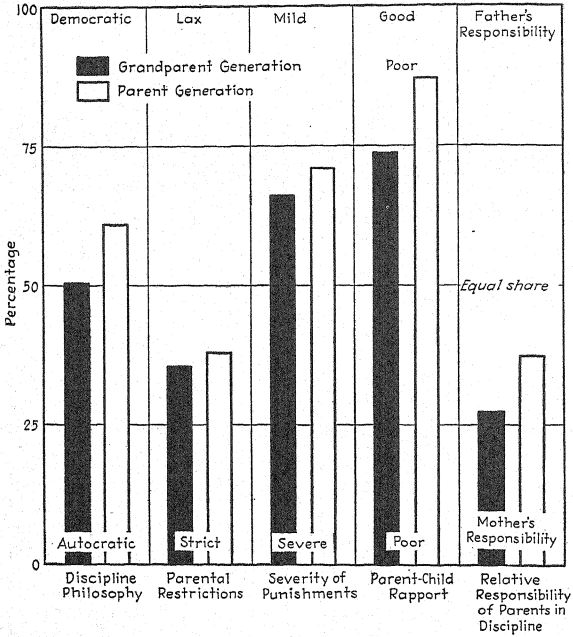

FIG. 70. Comparison of discipline in parent and grandparent generations. (*From M. J. Radke, The relation of parental authority to children's behavior and attitudes. University of Minnesota Press*, 1946. *Used by permission.*)

Changes in discipline during the last generation or two have been marked. To determine just how great these changes have been, Radke (1946) compared the discipline used by the parents of a group of preschool children with that used by their grandparents, as reported by the children's parents. In Fig. 70 is shown a comparison of disciplinary pro-

cedures used by parents of these two generations. This figure shows a general trend toward less autocratic, unreasonable, and emotional discipline and in the direction of standards advocated by child psychologists.

Principles of Discipline. Discipline consists primarily of habit formation and thus involves four essential principles. (1) The child must act in a desirable manner and eliminate undesirable behavior; (2) he must associate satisfaction with desirable and dissatisfaction with undesirable acts; (3) he must make the desirable act so automatic that it will, in time, be repeated of its own accord without need of supervision; and (4) he must learn to substitute desirable for undesirable behavior.

Even though positive motivation, in the form of reward, brings better results than negative motivation, in the form of punishment, punishment should not be eliminated. The recognition of the possible consequences of an act is essential to all moral behavior. This involves the ability to foresee what will happen if an undesirable act is carried out—an ability which is not found in individuals of low-grade intelligence. Because the recognition of possible consequences of an act necessitates an evaluation of the act, every child must learn to weigh alternative acts with consequences associated with each. He thus learns to decide for himself whether the act is worth its "price tag."

Function of Rules. Rules and laws serve two useful purposes in discipline: (1) they act first as an educational agency, to acquaint the child with the standards of conduct that are acceptable to the group, and (2) they are restrictive, in that they restrain undesirable behavior. By the adolescent years, provided discipline has been of the right sort, rules and laws should not be needed. But, if they were not used, many individuals would quickly lapse into unsocial behavior. They thus serve as a preventative to antisocial behavior.

Rules, to be effective, must be consistent. Otherwise, the child is at a loss to know what to do and whom to obey. What effect conflicting authority will have on a child has been investigated by Meyers (1944). Nursery-school children, while engaged in play, were given commands in pairs by two adults. When identical commands were given, the common tendency was toward obedience. But, when the two adults gave different and incompatible commands, the child sometimes vacillated between the activities, obeying one or the other, or both in turn, but frequently obeying neither adult.

Sometimes, it was noted, the child dropped what he was doing and wandered off to do something else. If the commands were such that one adult forbade the activity in progress while the other adult encouraged it, the usual reaction was found to be a cessation of the activity, though the child did not wander off to something else. In both cases, emotional consequences were often severe.

Types of Discipline. While the common method of disciplining children in most households is to spank the child when he misbehaves, there is a growing tendency to frown upon spanking and all other forms of corporal punishment. Today, many different disciplinary methods are in use, some proving to be more effective than others.

In Table LX are given the child-training methods reported by the parents questioned by Long (1941) and the frequency of their use.

TABLE LX. DISTRIBUTION OF CHILD-TRAINING METHODS REPORTED IN CONNECTION WITH 48 BEHAVIOR TENDENCIES

Method	Per Cent
Reason at length with child	41.3
Scold, tell child emphatically what he must do	12.0
Ignore completely, let child choose his own course	11.3
Make child feel ashamed of his behavior	10.9
Reward, praise, promise extra favors	9.0
Make special effort to cultivate companionship with the child	9.0
Take special precaution, as to remove child from the situation	8.5
Substitute other activity	7.1
Treat situation as unimportant	6.9
Send child to own room until willing to obey	6.8
Punish by spanking	5.7
Deprive child of desired object, toy, dessert, etc	5.2
Make sport of situation, laugh at child	4.0
Watch but not interfere with situation	3.5
Make child sit quietly in chair, separated from the group	2.6
Use physical means, as putting child to bed	2.3
Exact penalty for offenses	1.6
Use severe measures of punishment	1.3
Send child to bed	0.5
Put child in dark room	0.4

Source: LONG, A. Parent's reports of undesirable behavior in children. *Child Develpm.* 1941, **12**, 58. Used by permission.

The methods reported indicate, as may be seen by the table above, an important frequency of discussion of behavior and problems with the child and a relative infrequency of physical coercion. Scolding, ignoring, praising, guarding, bribing, and other methods of child training were mentioned in much smaller proportion than "reasoning."

Children's Reactions. If discipline is to serve its function of teaching the child to behave in a socially acceptable manner, it is essential that the disciplinary methods used shall create a healthy attitude on the child's part toward discipline and toward those in authority.

Ayer and Bernreuter (1937) analyzed eight types of discipline to see what effects they had on the personality of nursery-school children. The types of discipline studied included physical punishment, isolating or ignoring the child, natural result of the child's act, worry (scaring the

child and thus making him afraid or worried), rewards or promised rewards, doing the first thing that pops into a parent's head, temper (on the part of the parent to get the child to do what is wanted), and penance (such as making the child sit on a chair or go to bed). Of these, they found that isolation, physical punishment, and "natural results of a child's act" were the most frequently used.

An evaluation of the different methods showed that the more physical punishment is used on children, the less they tend to face reality and the more they depend on adult affection and attention. "Natural results of the child's acts" proved to foster attractive personality and independence of adult affection or attention. Scolding or making the child afraid tends to make children unattractive and dependent. Using temper, extracting a penance from the child, or doing the first thing that pops into the parent's head tends to make children less attractive, less able to face reality, and less sociable. In conclusion, they contend that allowing the child to profit by the natural results of his acts is the most satisfactory form of discipline to use in the case of preschool children. Figure 71 shows the stubborn, resentful attitude caused by wrong forms of discipline.

What effect strict home discipline will have on the personality and behavior of the individual as he grows to maturity was investigated by Watson (1934). The following characteristics were noted among those whose childhood discipline had been strict, as compared with a group whose home training had been lax.

1. Dislike for parents, as shown in rude answering, irritation, and being ashamed of parents.
2. Combative attitudes developed in relation to parents were carried out in other relationships and took the form of feeling that teachers had been unfair to them, quarrels with friends, and grudges against some people.
3. Infantile dependence, as shown in bashfulness, being finicky about food, curious about sex matters, desire to be little again, and inability to decide on future vocation.
4. Social maladjustments, as seen in unpleasant nicknames, teasing by others, and being hurt by things said and done by associates.
5. Tendency to guilt, worry, and anxiety.

Similar findings were reported by Stogdill (1937), who stressed the fact that very strict discipline in the early home life of the child may be associated with later personality maladjustments, delinquencies, or unhappiness. Children who come from homes where discipline is lax are more likely to be happy and well adjusted.

How children's attitudes toward discipline are affected by the socioeconomic and cultural groups to which they belong has been investigated by Dolger and Ginandes (1946) in the case of fifth-grade boys and girls from two widely different neighborhoods in New York City. Each one

was asked to write a composition telling what should be done to a child in a specific situation in which disciplinary action was needed.

Approximately two-thirds of the suggestions given were for constructive solutions to disciplinary problems, while one-third were nonconstruc-

FIG. 71. Stubborn resentful response to punishment. (*From L. H. Meek, Your child's development and guidance told in pictures. Lippincott,* 1940. *Used by permission.*)

tive appeals to authority. The children who came from the poorer socioeconomic groups more often favored an appeal to authority to meet disciplinary problems than did those of the more favored socioeconomic group. The children of the poorer group tended to hold the individual child responsible for any violation of rules of conduct. They thought

far more often in terms of punishment for the offending child than did children of better social backgrounds. The latter seemed able to comprehend better an environmental basis for misconduct and to suggest that the circumstances which produced the misbehavior be changed.

A typical example of the different attitudes shown by children of the two groups may be seen in the case of truancy. Children of low socioeconomic status suggested that the truant officer should punish the child who played hookey, while children of the better socioeconomic group wondered if truancy might not be due to the fact that the truant was unhappy at school. If so, they suggested that a change of school might solve the problem.

As a general rule, Dolger and Ginandes found, the children from the poorer group were more inclined to favor punishing the culprit and avenging his misdeeds than were the children who had been reared in homes of higher socioeconomic status.

The assumption is that effective disciplinary techniques will prevent the recurrence of bad behavior. To find out how children feel about parental discipline, Radke (1946) asked preschool children the question, "How do children feel after their mother or father punishes them?" As may be seen in Table LXI, children feel unhappy and have memories of physical pain more often than they resolve to avoid disapproved of behavior in the future.

TABLE LXI. CHILDREN'S REPORTED FEELINGS AS A RESULT OF PARENTAL PUNISHMENTS

Response to Punishment	Percentage of Cases
Feelings of penitence or resolution for better behavior	14
Feelings of sadness, unhappiness, pain	63
Feeling that punishment was unjustified	7
Didn't feel better or worse	5
Don't know how they feel	11

Source: RADKE, M. J. *The relation of parental authority to children's behavior and attitudes.* Minneapolis: University of Minnesota Press, 1946, p. 57. Used by permission.

Sowers (1937) asked boys and girls questions regarding their attitude toward parental control and discipline. The largest percentage, 35 per cent, said they thought parents should be firm or strict, require obedience, and not spoil children. Seventeen per cent felt that parents should be reasonable and just, not too strict; and 12 per cent, that parents should criticize constructively and reason with children instead of punishing them.

When DuVall (1937) questioned children about whether they thought their parents were "too strict" or "too easy" with them, he found that underprivileged children tended to evaluate parental disciplinary methods

as being too strict, while children of average socioeconomic status thought their parents were too easy. Boys, as a whole, reported that their parents were too strict. Fathers, strange as it may seem, were considered "too easy" more frequently than were mothers.

How fifth- and sixth-grade children feel about home punishments was investigated by Gardner (1947), through the use of a questionnaire. Both parents, it was reported, punished an almost equal number of times, though there was a tendency for the parent to punish the child of the same sex slightly more often than the child of the opposite sex. In 72 per cent of the cases, the children said they preferred the mother to administer the punishment, because they thought she was more lenient. Only one child in five felt unjustly punished. Fuller (1931) likewise found mothers more lenient than fathers as disciplinarians.

PUNISHMENT AND REWARD

Punishment serves two major functions in discipline: (1) it acts as a deterrent to prevent repetition of socially undesirable acts, and (2) it acts as a means of showing the child what the social group regards as right or wrong. If it is to achieve the desired results, punishment must not serve as an outlet for the pent-up anger of the person who has been offended or as a penalty for wrong deeds committed in the past. As the child's criterion of the seriousness of his offense is based on the severity of the punishment he receives, the necessity for consistent punishment should be apparent. Unfortunately, because most parents and other adults punish in anger, this criterion loses its value. If the child learns that inevitably a wrong act will result in a given punishment, he will think twice before carrying out the wrong deeds he may have contemplated.

Among preschool children, Radke (1946) found, mothers and fathers show great similarity in the types of punishment they use. Only in one type, depriving the child of privileges and pleasures, is there any real difference. This is used less frequently by fathers than by mothers. Different types of punishment used by parents are given in Fig. 72, as reported by parents when the child entered nursery school and a year or so later. The comparison shows the permanency of the types used. It also indicates that more punishments are used as the child grows older. Only two—praise and reward, and ignoring—show a decrease in usage.

Analysis of the punishments from the point of view of the influence they are presumed to have on behavior reveals that most are aimed at undermining the child's power or restricting his freedom—spanking, depriving, isolating, frightening, shaming, and withdrawing love. Less restrictive and less power-reductive forms are praise and rewards, reasoning, and verbal appeals.

Fathers, Gardner (1943) found, punished small children under six by deprivation in 45 per cent of the cases she studied; by physical methods, in 37 per cent; and by verbal forms, in 16 per cent. For younger children, mothers left punishment to the fathers habitually or occasionally in only

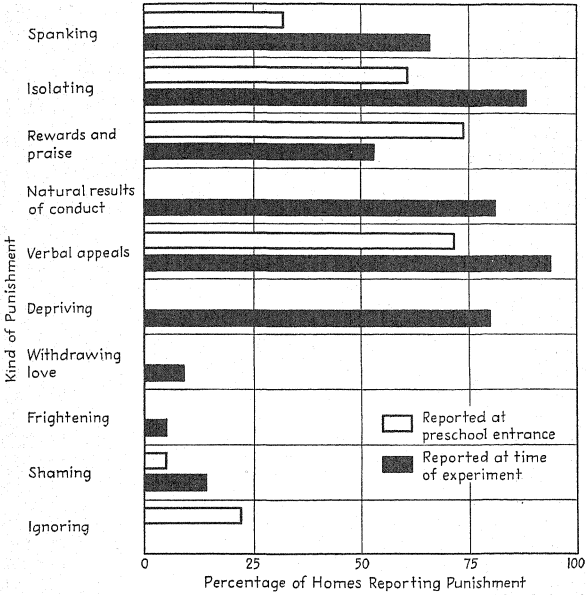

FIG. 72. Kinds of punishment reported by parents. (*From M. J. Radke, The relation of parental authority to children's behavior and attitudes. University of Minnesota Press,* 1946. *Used by permission.*)

29 per cent of the cases. Among children from six to twelve years of age, various forms of punishment were used, with major emphasis on deprivations, verbal methods, and physical methods. Disobedience was found to be the cause of the punishment in 48 per cent of the cases.

Punishment is generally given to correct faults in behavior, without taking into consideration the child's motive. This obviously is unfair to the child. The adult who administers the punishment should make a

definite effort to analyze the child's behavior in order to discover what motivated the wrongdoing. From the child's point of view, the fair thing is to tell him, as soon as he is able to understand, why the punishment is given. This not only emphasizes the educational value of punishment, but it eliminates the possibility of the child's interpreting it as due to personal annoyance on the part of the individual who administers the punishment.

Corporal Punishment. Most adults think of corporal punishment, especially slapping the hands or spanking, as the most effective form of punishment to use in dealing with the wrongdoings of the child. Contrary to popular opinion, corporal punishment is one of the least satisfactory types, because it seldom is actually associated in the child's mind with the act for which the child is being punished. Because corporal punishment is generally administered when the adult is angry, it tends to condition the child to dislike the punisher. Since the anger of the adult is a more dominant factor in the situation than the act itself, the child tends to associate the whipper with pain rather than the wrong deed with pain. For that reason, the real value of this type of punishment is lost.

If corporal punishment is used, it should be administered while the act is going on and not delayed until a later time or left for someone else to administer. When the punishment is delayed, the association in the child's mind between the act and punishment is not made, and consequently the whole value of the punishment is lost. Corporal punishment, if used at all, should be used only up to the age when the child is capable of comprehending what is said to him, which is between the second and third years. After that time, a form of punishment more definitely related to the act should take the place of corporal punishment.

Other Forms. Any form of punishment that has no direct relationship to the act is, like corporal punishment, less effective than a form of punishment that has a direct relationship to the act. For that reason, scolding, depriving the child of pleasure, isolating him from his playmates when the wrong act had nothing to do with them, putting him to bed without supper, or other similar punishments, are not as effective as the adults who use them expect them to be. It is far easier, it is true, to use some "stock punishment," regardless of the situation involved, and it requires far less ingenuity on the part of the user. But this does not serve its purpose as well as an individual punishment would.

Instead of making a child stand in the corner for upsetting his milk willfully, he should be made to wipe it up. Similarly, if he intentionally breaks the toy of another child, he should be required to offer the child one of his toys to replace the broken one. Or, if he pulls the hair of another, his hair should be pulled so that he may know "how it feels." Punish-

ments that are related to the act are sometimes hard to decide upon on the spur of the moment, but they are well worth the effort and ingenuity involved in planning them.

Parents of preschool children, Coast (1939) found, are far more favorable to the use of corporal punishment as a means of control than are persons having an extended background in child development.

Punishments Advocated by Children. What punishments would children choose if they were given an opportunity to decide upon the specific punishment they felt their misbehavior deserved? This question Radke (1946) asked of a group of nursery-school children in the form, "What should mothers and fathers do when their children are naughty?" The children recommended, Radke found, as suitable punishments those which they themselves had been given when they misbehaved. The recommended punishments are listed in Table LXII.

TABLE LXII. FORMS OF PARENTAL PUNISHMENT RECOMMENDED BY CHILDREN

Form of Punishment Recommended	Percentage Recommending It
Spanking	83
Isolation	11
Scolding and talking cross	2
Playing	2
Don't know	2

SOURCE: RADKE, M. J. *The relation of parental authority to children's behavior and attitudes.* Minneapolis: University of Minnesota Press, 1946, p. 64. Used by permission.

Improvement in Punishment. Thorndike (1935) has suggested five ways in which it is possible to improve the results obtained from punishing the child. They are as follows:

The first is to try to make sure in each case that the punishment belongs to the behavior in question. . . .

The second is to forestall the punishment in cases where the want which led to the offense can be satisfied innocently.

The third is to shift the emphasis from the discomfort of A to the relief, security, and comfort of not-A, when it is prudent to do so, as it usually is.

The fourth is to search for ingenious ways of using the cue and almost foolproof method of arousing the confirming reaction by attaching relevant satisfiers to the desired connection, in place of punishments for wrong connections. There are now homes in which the ratio of rewards to punishments for children from birth to fifteen years or later has been as high as 20 to 1, perhaps 50 to 1, with apparently excellent results. The motivation to learning in the primary grades of schools changed in a half-century from pain to pleasure to the great advantage of all concerned. If weakness and sentimentality can be avoided and sufficient ingenuity can be exercised, the management of men in all lines by the selection of their good tendencies rather than the repression of bad ones is a hopeful prospect.

A fifth is to arrange in a scientific, or at least a reasonable, manner the punishment which, even after the fullest use of rewards, will still remain as an important means of human control. Much of the use of punishments in the past has been doctrinaire, haphazard, fantastic and perverted. [Quoted by permission.]

Rewards. Too much emphasis on punishment leads the individual to lose sight of the value of using rewards in the discipline of the child. If the child is to learn to act in a socially desirable way, it must be worth his while to do so. For that reason, rewards must be used to build up pleasant associations with the desired act. But this does not mean artificial rewards or "bribes" that have no relationship to the act.

Like punishment, rewards should have a direct relationship to the act that one wishes to have repeated, and in that way the pleasant associations will motivate the child to repeat it. Perhaps the simplest and yet most effective reward is social recognition in the form of praise. This can always be tied up with the act, as "You cleaned up your room very well, Johnnie." At the same time, it satisfies the desire on the part of every normal child for social recognition.

FACTORS INFLUENCING MORAL DEVELOPMENT

The moral development of children is influenced to a large extent by the type of environment the child has from earliest babyhood. Of the many factors in the child's environment that influence his morality, the following are the most important:

1. The Family. The influence of parents, as well as other members of the family, takes four distinct forms. (1) The family's behavior acts as a model for the behavior of the child, who imitates what he observes in others. (2) By the use of approval or disapproval, reward, or punishment, the family teaches the child to behave in a socially desirable manner. (3) By planning the punishment to fit the misdeed, the family can teach the child to recognize the severity of his wrongdoing. (4) The family can do much to motivate the child to do right.

Children under normal conditions look up to and admire their parents, relatives, and older brothers and sisters. If the conduct of these individuals is undesirable, the child will accept it as standard and behave in a manner disapproved of by the members of his social group. If, for example, adults boast about breaking traffic laws, or if they lie about illness to get out of a social obligation, the model of conduct thus set is far from desirable for the child to copy.

Bad health of the parents, low intelligence, low economic status, and many other factors contribute to a poor home environment. Bad home conditions, in turn, work disastrously against the child's moral development and frequently predispose him toward juvenile delinquency.

Because the girl's life, as a rule, is more centered in the home than is the boy's, bad home conditions are more detrimental to the girl's morality than they are to the boy's.

How the economic status of the family influences behavior problems in children has been investigated by Pisula (1937). Stealing, ranging from occasional appropriations of siblings' clothing to stealing a car, truancy, running away, lying, and bullying—all these appeared among the children of high economic status, though not so often as in the case of children of low economic status.

Experimental studies of the relationship between the child's moral concepts and those of the family have stressed the importance of the home environment. Hartshorne, May, and Shuttleworth (1930) reported a correlation of .55 for moral knowledge scores in the case of parents and children, as contrasted with .35 for children and their Sunday-school teachers. This suggests that the child's ideas of right and wrong are more influenced by his parents than by his friends, teachers, or Sunday-school teachers.

Fite's (1940) analysis of the attitudes of nursery-school children toward aggressive behavior, determined by the child's response to pictures and to an experimental play situation in which boy and girl dolls were set to play in a playground made of blocks, showed the attitudes to be a direct representation of parental attitudes and of the rules of the home, as imposed by parents. Strong emotional responses occurred when requests were made for behavior definitely contrary to parental rules. Children's attitudes toward aggression, Fite concluded, thus proved to be the result of rules relating to aggression as laid down in the home. They reflected parental rules regarding specific home situations, such as behavior with siblings and the degree of certainty or confusion about aggression that the parents themselves expressed.

Studies of conduct disorders and delinquency likewise stress the importance of the home as a factor in determining the conduct of the child. Fernald's (1915) study of delinquent girls showed that 87 per cent of them came from broken homes or homes where the conduct example was of a definitely inferior sort. In an analysis of the conduct disorders of children brought to their clinics, Paynter and Blanchard (1928) claimed that poor home training and discipline were important causes of delinquency in 90 per cent of the cases. Broken homes, they found, were a contributing cause in 40 per cent of the cases.

2. Playmates. When the child reaches the school age, a large percentage of his waking time is spent away from the home. As his contacts are more with children of his own age than with adults, it is not surprising to find that his playmates exert a tremendous influence over his behavior as well as his moral concepts.

Even in the case of nursery-school children, Fite (1940) found the influence of companions powerful enough to cause the children to deviate from parental rules in their attitudes toward aggression. With the development of "group feeling" came an increasing independence of adult rules, accompanied by an increase in the influence of group authority. Group authority, Fite noted, consisted of (1) patterns derived from adult rules, (2) patterns from experience in dealing with other children, and (3) patterns from other child groups resulting from criticisms of other groups. If the attitude of the group deviated markedly from the home pattern, a strong conflict on the child's part resulted.

Healy and Bronner (1926), in a study of delinquent children in Chicago and Boston, found that 62 per cent of the delinquencies were traceable to bad companions and only 13.5 per cent to feeblemindedness. From his study of delinquents, Healy (1915) has concluded that companions play a very important role in determining the moral behavior of the child.

Hartshorne and May (1928*a*) in their analysis of the scores children made on tests of deception, reported a correlation of +.23 between the children's standing on these tests and the standing of their best friends not in the same classroom. When the children and their friends were in the same classroom, however, the correlation rose to +.66. This, they maintained, demonstrates clearly the influence a child's friends has upon his conduct in a group.

How the standards of the group to which the child belongs influence his conduct has been emphasized by Thrasher (1927) in his study of boys' gangs. The standards of the group, he pointed out, not only influence the moral outlook and behavior of all its members, but they are especially important in influencing the newcomers.

Jones (1936) reported similar results in an analysis of the moral behavior of junior-high-school students. He maintained that the conduct of individuals in a group is frequently "group-linked." The behavior of the individual under the influence of the standards of one group may not be typical of his conduct when alone or when with another group.

The attitude of delinquent children toward their parents, Zucker (1943) noted, is quite different from that of nondelinquent children of the same age. Fewer delinquents than nondelinquents showed an affectional attachment to their parents, and delinquents were less concerned about the welfare of their parents. Furthermore, delinquents reported more instances in which their parents reacted to problems presented by their children in a manner that disturbs affectional relationships between parents and children than did the nondelinquents.

3. Schools. Competitive athletics, which are so popular in late childhood, offer splendid opportunities for moral training. Through sports,

the boy or the girl learns to be fair, to be a good sport, and to subordinate selfish interests for the good of the group. Any behavior that does not measure up to the moral code of good sportsmanship will not be tolerated. Too much emphasis on winning, however, encourages the player to cheat. If he plays fairly and loses, he feels inferior and thus is tempted to cheat.

Through self-government, the older child learns to behave in a socially acceptable way. Schools that have inaugurated systems of self-government report that it does much to improve the quality of behavior of the student body as a whole, as well as to develop desirable moral concepts. This is not surprising, since the age when self-government is usable is the age when the gang plays a very important role in determining the child's moral behavior.

Hartshorne and May (1928*a*) noted no real evidence of general improvement in moral behavior as children pass through the middle grades. When improvement does take place, they stressed, it seems to be contingent not upon the length of attendance in school but upon teacher-child relationships, class morale, and special emphasis placed by the school upon character and citizenship training.

In an experiment with four equated groups of school children, Jones (1936) found that special training in moral conduct in schools brings improvement only when emphasis is placed both on actual experiencing in concrete situations and on the discussion of the meanings and significance of the activity.

4. Sunday School and Church. One of the responsibilities assumed by churches in the past was the moral education of the child. Today, owing partly to waning of interest in churchgoing and partly to a changed attitude in regard to the functions of the church, the child receives little moral training from Sunday-school or church attendance. For that reason, the church cannot be regarded as a factor of major importance in the moral development of the child today.

From church, Sunday-school, or home instruction, the child learns that certain things are wrong because they are acts against God's laws and are therefore punishable in the life to come. Even though not caught, the child is often told that he will receive his punishment in due course of time. This differs from social enforcement in that it stresses God's disapproval and future punishment rather than present punishment of a tangible sort.

In studies of cheating, Hartshorne and May (1928) found that the children of their group who attended Sunday school had a slightly lower score for cheating than those who did not. The score for the Sunday-school-attending group was 31, compared with 40 for the nonattending group. Results in the White House Conference Report (1932) showed a

relationship between church connections and delinquency. Of the 2,191 delinquent children studied, 37 per cent had no church connection, and 26 per cent attended only irregularly. Maller (1930) reported that the honesty of a group of Jewish children was markedly increased by attendance at religious schools.

5. Books and Movies. The effect of books on the moral concepts of the child is unknown. Because it is assumed by parents and teachers that the child's moral standards are influenced by the type of book he reads, careful supervision of the child's reading is considered important. Healy (1915) believes that the reading of bandit and other stories of a similar sort contributes to delinquency. The reading of good books, on the other hand, is believed to contribute to the establishment of desirable moral concepts, but how great this influence is cannot be determined experimentally.

A great deal of attention has been given to the problem of the effect of movies on the moral attitudes and behavior of the child. Just as movies influence the speech and dress of individuals, it is justifiable to assume that they will likewise influence the moral behavior. They help to mold the individual's outlook on life; they create desire for riches and luxury; and they suggest the ease of crime. Because the child is very suggestible, especially during the adolescent years, careful censorship is essential if the child is to be kept from seeing movies of the type that will be detrimental to his moral development. Most states provide for a strict and carefully controlled censorship.

A number of experimental studies have been made to determine the influence of movies on behavior. Dysinger and Ruckmick (1933), through the use of psychogalvanic response measurements, found that children under twelve years of age responded most intensely to scenes of conflict, danger, and pseudo tragedy, while those near sixteen years of age had the greatest reaction to love scenes or those suggestive of sex. Thurstone (1931) investigated the effect on the attitudes of children from grades nine to twelve of viewing a movie related to gambling and one related to prohibition. Children were found to regard gambling as more serious than they did before seeing the picture, while the prohibition picture had no measurable effect.

How movies influence crime and delinquency has also been investigated. Healy and Bronner (1926) have concluded from their study of 4,000 cases that in only about 1 per cent of the cases were the children motivated in their acts of delinquency by the movies. In a later study (1936), they reported again that only a few of the delinquents studied said that they "had derived ideas from gangster or other crime pictures upon which they definitely patterned their own delinquencies."

Hartshorne and May (1928) found a low correlation between attendance at movies and scores in cheating. In only about 10 per cent of the cases of delinquency among boys and 25 per cent among girls did Blumer and Hauser (1933) find that movies were of any influence. The indirect influence of the movies, they found, came through a display of criminal techniques, arousing a desire for easy money and luxury, stimulating intense sexual desires, or suggesting questionable methods of behavior.

INTELLIGENCE AND MORALITY

The relationship between intelligence and morality is important, but it is not so important as was previously believed. It is true that the child needs intelligence of a certain degree to be able to distinguish between right and wrong and to be able to foresee the consequences of his acts, but that does not necessarily mean intelligence of a superior level. Other factors than intelligence, as has been demonstrated in the preceding section, play a role of importance in determining the moral behavior of the child. Hartshorne and May (1928), for example, found a correlation of .50 between intelligence and honesty scores in the case of school children. This would suggest that there is little more than chance relationship between intelligence and honesty in the group they studied.

Studies of 1,000 children with I.Q. scores above 130 have shown them to be superior, Terman (1926) found, to a control group of the same size, made up of unselected children, in tests of honesty, truthfulness, and similar moral traits. The differences between the two groups were striking. Studies of delinquency have attempted to discover what percentage of the delinquent group is feebleminded. Burt (1925), in England, found that 8 per cent of the 200 delinquents he studied had I.Q. scores below 70, while Healy and Bronner (1926) reported that 13.5 per cent of the 4,000 delinquents examined by them in Boston and Chicago were feebleminded. Slawson (1926), in a study of delinquent boys from four institutions in the state of New York, reported that the intellectual deficiency of the delinquents was apparent mostly in the case of verbal abstract intelligence and was less marked in nonverbal concrete intelligence.

According to Wiggam (1941, the

> chief reason why intelligence and right conduct tend to go together more often than not is that intelligent individuals know that right conduct is simply intelligent conduct—the conduct that gets the best results. . . . Brilliant children tend to choose the right conduct simply because they see it is the course of action that promises the best consequences. An intelligent child or adult discovers he can get what he wants in life more easily and surely by honesty than by deception, by kindness than by cruelty, by accepting social duties than by dodging them (pp. 262–263).

MISDEMEANORS

A misdemeanor is mischievousness, disobedience, or willful badness of a minor sort. Most little children learn, unfortunately, that they get more attention when they are naughty than when they are good. They therefore are often intentionally naughty because they feel that they are being ignored. Even though they are punished for it, the pleasure they have derived from being in the spotlight far outweighs the temporary discomfort of the punishment. Much of the destructiveness of young children is not caused by clumsiness or lack of motor control but by a willful attempt to attract attention to themselves.

Groups of older children delight in willful misbehavior because it gives each member a sense of personal importance. If the misbehavior takes the form of annoying others, such as ringing door bells; letting air out of automobile tires; or drawing pictures on pavements, houses, or fences, the group members derive special pleasure from feeling that they are masters of the situation. Even though misbehavior in school, in the form of whispering, passing notes, or tormenting other pupils, is sure to result in some form of punishment, the youth feels that it is well worthwhile, because all eyes in the classroom are focused on him, and all pupils listen attentively while the teacher scolds or administers punishment.

Misdemeanors increase throughout late childhood and reach their peak shortly before adolescence. At this time, the child is making a transition from parental to group authority, with the result that in many cases there is a lessening of external control over his behavior. There are many different forms of misdemeanor at this age, the six most common in elementary-school children, Wickman (1929) found to be whispering, inattentiveness, carelessness in work, "tattling," disorderliness in class, and interrupting in class. The six that occurred least were truancy, temper outbursts, stealing money, stealing food, writing obscene notes, and smoking. One of the important conclusions from Dickson's (1932) study is that "those things which cause the most disciplinary troubles to the average teacher are natural to a normal child. . . . To put it in other words, the child who has not behavior difficulty is not normal."

Home Misdemeanors. Most of the studies of misdemeanors in children have been made in schools, either in the classroom or in connection with extracurricular activities, because of the accessibility of children for study. An interesting study of the undesirable behavior of children in the home has been made by Long (1941) through the use of an anonymous questionnaire containing 57 descriptions of undesirable behavior. This questionnaire was answered by 277 parents. Eighty per cent of the children reported on were under twelve years of age.

The misbehavior most frequently reported for children of three to four years of age was capriciousness, bed-wetting, seeking attention, thumb-sucking, temper tantrums, and dawdling, all of which are associated with immaturity. These, for the most part, wane in frequency of appearance as the child grows older (see Fig. 73).

In the seven- to ten-year-old group, there was a lessening of the

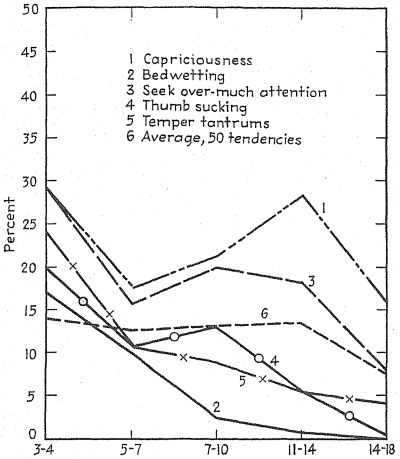

FIG. 73. Most frequent misdemeanors at 3–4 years. (*From A. Long, Parents' reports of undesirable behavior in children. Child Develpm.*, 1941, **12**. *Used by permission.*)

behavior tendencies most frequent among younger children. In their place, however, appeared new forms of behavior indicative of the children's inadequate technique for entry into the rapidly expanding experiences of later childhood. Willfulness, for example, which occurred more frequently than at earlier ages, is indicative of a method used by individuals still inexperienced in socially acceptable ways of getting what they desire. This type of behavior drops rapidly as the child grows older. Other forms of undesirable behavior characteristic of this period are irritability, a tendency to be easily discouraged, and the state of having many fears. These, like willfulness, suggest the difficulties children of this age experience in orienting themselves to new experiences (see Fig. 74).

Children of the prepuberty age (eleven to fourteen) are selfish and shy, avoid responsibilities, are easily discouraged, are overly conscientious, and are satisfied with mediocre products of their industry. They resist bedtime because of an increased interest in social living and revolt against seeming to be young (see Fig. 75).

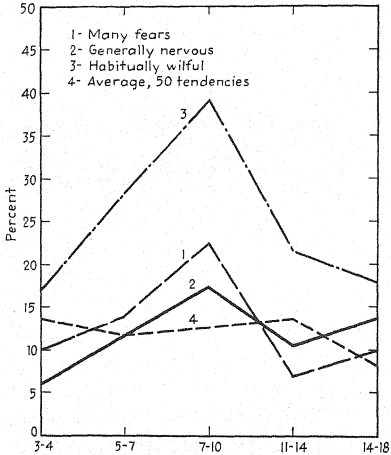

FIG. 74. Most frequent misdemeanors at 7–10 years. (*From A. Long, Parents' reports of undesirable behavior in children. Child Develpm.*, 1941, **12**. *Used by permission.*)

Sex differences in undesirable home behavior were not found to be great but a few that are significant are worth mentioning. More boys than girls of the three- to four-year-old group were hostile and suspicious, while more girls than boys were willful. In the seven- to ten-year-old group, more girls than boys were disobedient and overly conscientious, while more boys than girls were easily angered and had uncontrolled tempers.

An interesting aspect of Long's study was the analysis of the mother's influence on children's misdemeanors. Children whose mothers were more than 28 years older than the children, it was found, were quarrelsome and willful. There was a significantly low frequency of stealing and sneaking among children whose mothers were less than twenty-eight years of age at the birth of the child. Uncontrolled temper, antagonistic

or resentful attitudes, resisting bedtime, and excessive mischief were reported more frequently among children whose mothers did not attend school beyond high school. Among those whose families were rated below the median of the group, habitual stubborness, excessive mischief, bad table manners, and being satisfied with efforts below real ability were reported very frequently.

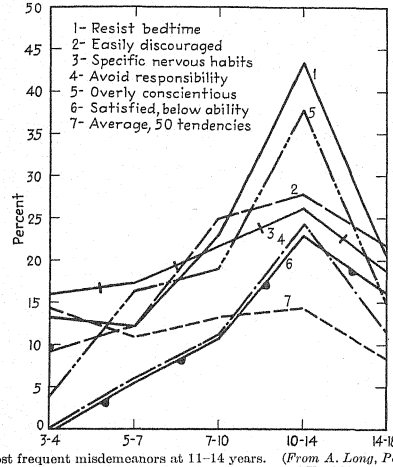

FIG. 75. Most frequent misdemeanors at 11–14 years. (*From A. Long, Parents' reports of undesirable behavior in children. Child Develpm.*, 1941, **12**. *Used by permission.*)

Children's Lies. One of the most extensively studied forms of misdemeanor in children is lies. Leonard (1920) analyzed nearly 700 lies of children and found that 68 per cent were due primarily to fear of punishment, disapproval, or ridicule. About 12 per cent were due to childish imaginings, exaggerations, and inaccuracies, while the remaining 20 per cent were willful inventions, intended to deceive.

Morgan (1931) has classified children's lies into seven types: (1) the playful lie, due to the make-believe play of imagination; (2) the lie of confusion, owing to inability to report accurately the details of some incident or to the beclouding of the issue by suggestions of another; (3) the lie of vanity, designed to draw attention to one's self; (4) the lie of malevolence or revenge, motivated by hate; (5) the excusive lie, resulting from

fear that follows rigid discipline; (6) the selfish lie, which is calculated to deceive others so that one may get what he wants; and (7) the loyal or conventional lie, to safeguard a friend.

Occasionally boys and girls at this age will lie or blame others to avoid the punishment they know they deserve because of a wrongdoing willfully carried out. A small percentage of children, usually boys, considers it "smart" to try to "get away with" wrongdoing without being punished for it. This attitude is fostered by an environment in which adolescents or adults boast about their success in escaping punishment for wrongdoing or by an environment in which the child is actually taught to believe that it is all right to do a wrong thing provided one is clever enough to "get away with it."

Lewis (1931) found that lying children, for the most part, come from unstable homes, are frequently "unwanted," and suffer from inconsistent discipline in the home. Nearly two-thirds of the mothers of the lying children she studied reported that they themselves had frequently lied when they were children.

Dishonesty. Dishonesty, in forms other than lies, appears in the preschool years, but it is more pronounced late in childhood. Boys and girls learn, from their own experiences or from those of their friends, ways and means of deceiving others, especially parents and teachers. They may pretend to be ill to avoid carrying out an unpleasant task; they may hide objects broken unintentionally or pretend that someone else did it; they may feign ignorance of a rule which they have broken; they may cheat in schoolwork or athletics; or they may steal. All these forms of dishonesty are found in childhood; and few children are free from dishonesty in one form or another.

One of the outstanding experimental studies of dishonesty has been made by Hartshorne and May (1928), who investigated dishonesty in the case of nearly 11,000 school children of different cultural, socioeconomic, and intellectual levels by means of a number of tests designed to measure honesty and dishonesty in an objective way. These tests gave the children opportunities to cheat in classroom work, in schoolwork done at home, in athletic contests, and in parlor games. A few illustrations of the test situations used will show how honesty was tested by them.

To measure cheating in the classrooms, Hartshorne and May had children give answers to arithmetic problems on the margin of the test papers. The papers were then collected and a duplicate made of each paper. The papers were returned to the pupils at a later session of the class, and each pupil was asked to score his own paper by using a key or answer sheet given to him. Deception consisted of illegitimately increas-

ing the score by copying answers from the key. A test of cheating in parlor games, such as pinning the tail on a donkey, consisted of adjusting a bandage in such a way that the blindfolded child could see the floor under the bandage. This enabled him to follow the floor boards and look at the donkey so that he could pin the tail on it very accurately, which, however, could not be accomplished unless the child peeped.

A few of the important findings of this study are as follows: In general, there is no outstanding sex difference in cheating, though in some of the tests a sex difference appeared. Older pupils are slightly more deceptive than are the younger ones. When children are classified into occupational levels, according to socioeconomic status, those at the highest level deceived the least, and those at the lowest level, the most. Children of the higher levels of intelligence deceived definitely less than did those of lower intelligence. Children who were friends showed more than a chance resemblance in the amount of cheating they did. In the same test or very similar tests, the correlation of the scores was high but became lower as the test situations became increasingly different. This suggests that there is no generalized, uniform trait of honesty that characterizes the child in all his activities. Honesty and dishonesty are dependent to a large extent upon the situation itself, and the child's motives in regard to it, rather than upon a generalized moral trait.

How motivation through group or self-competition will affect the honesty or dishonesty of seventh-grade children has been investigated by Gross (1946). The situation in which the children had an opportunity to show their honesty was in the self-scoring of mathematical problems. Motivation aroused by group or self-competition did not appear to increase dishonesty. Rather, marked individual differences in dishonesty were found in individual children throughout the period of the experiment. Two-thirds of the children who were dishonest in this experiment were dishonest on only one of the days of the experiment. The mean I.Q. of the honest children, Gross noted, was higher than that of the dishonest, and the honest children were superior in achievement to the dishonest.

Changes in Attitude toward Honesty. How attitudes toward property rights develop and change as children grow older has been studied by Eberhart (1942) in the case of Chicago boys from grades 1 through 12. The boys were asked to rate in order of seriousness 20 offenses. Below are listed the offenses which they regarded as more serious in the upper grades, those that became less serious, and those which did not show a significant change. All are listed in order of the magnitude of change.

Offenses which gained in seriousness:

To snitch fruit from a peddler's stand.

To swipe flowers from a park.
To take a wheel from a wagon you find in the alley.
To swipe your mother's wrist watch and pawn it.
To lift $1 from your father's pants' pocket when taking the pants to the tailor.
To swipe $1 from your boss's desk.
To take a wagon from a boy's back yard.
To sneak a rubber ball from a dime-store counter.

Offenses which lost in seriousness:
To keep $1 you find on the street without trying to find the owner.
To keep a candy package you find after it has fallen from a truck.
To help yourself to chocolates from a box in your sister's room.
To borrow your brother's baseball without asking.
To ride on the streetcar for half fare when you should pay full fare.
To sneak by an "L" cashier without paying.

Offenses which did not change in seriousness:
To swipe $1 from your brother's bank at home.
To keep $1 you see a man drop from his pocket.
To keep a ball and glove you find in the school yard.
To snitch three tickets from a movie cashier.
To steal candy and cigarettes from a boxcar.
To swipe and sell lead pipes from an old warehouse.

(Page 27)

As may be seen from the above lists, the offenses which gained in seriousness all involved actual stealing in one form or another. In the second group, the less serious offenses related to hoodwinking the utilities, keeping found property, and using the belongings of sibs in the home.

When asked the reasons for their judgments, the younger boys gave as their reasons the fear of punishment more frequently than did the older boys. By contrast, the older boys gave as their most frequent reason the unwillingness to injure others.

JUVENILE DELINQUENCY

A juvenile delinquent is a child who commits an offense punishable by law. Any behavior which is so contrary to the laws and mores of the social group that it necessitates application of crime-correction procedure is judged as "delinquency." It is estimated that 1 per cent of American children under eighteen years of age, or roughly 200,000 children, are brought to juvenile courts yearly. The prevalence of delinquency is greater than the statistics given above would indicate, because many delinquent children are never caught and brought to court. Banister and Ravden (1943, 1944), in a study of English children, found the most difficult ages to be ten and eleven years, with delinquency high between ten and thirteen.

Causes of Juvenile Delinquency. The causes of juvenile delinquency may be divided roughly into two classes, the *predisposing causes* and the

motivating causes. The first group paves the way for delinquency, by establishing an unfavorable attitude toward moral conduct. The second group, on the other hand, actually causes the youth to behave in a manner considered to be unlawful by the social group. These would not be powerful enough to lead to unsocial behavior if the youth were not already predisposed to misbehave.

1. *Predisposing Causes.* Among the most important of the predisposing causes of juvenile delinquency are low-grade intelligence, emotional instability, physical or glandular disorders, poverty, poor home training, influence of bad associates, and an exaggerated sex urge. Any one of these alone would pave the way for delinquency, but when, as is often the case, several occur simultaneously, the chances for socially unacceptable behavior increase immeasurably.

Poor home training, bad associates, and poverty are a common combination of predisposing causes, as are low-grade intelligence, emotional instability, and physical or glandular disorders of one type or another. Hartshorne and May (1928) found that cheating in school was more common among children of inferior ability than among those of average or superior ability. The former were tempted to cheat because of their inability to succeed on the basis of their own work. Healy and Bronner (1926), in America, and Burt (1925), in England, have found that defective family relationships, defective discipline, bad companions, and uncongenial school environments are common in combinations of predisposing causes of juvenile delinquency.

Emotional maladjustment is another predisposing cause of delinquency. Groves (1936), in an analysis of cheating in schools, found that it can be attributed largely to "strain" resulting from overemphasis on marks and from the failure of the school to adjust the work to meet the individual capacities and interests of the pupils. Healy and Bronner (1936) report that children sometimes commit forbidden or even desperate acts to offset dissatisfactions or conflicts.

2. *Motivating Causes.* The motivating causes of juvenile delinquency are varied and complex. Usually, dissatisfaction with present conditions and a desire for better things, as seen in homes of friends, in stores, or in movies, or as described in books, motivate the youth to criminal behavior. The appeal of easy wealth and the desire for adventure, both of which have not been satisfied in daily life, lead to criminal action. Delinquent behavior is thus a response to some *thwarted desire* on the part of the youth. How serious this behavior is depends to a large extent upon how strong the thwarted motive is and what has thwarted it.

Forms of Juvenile Delinquency. The most common forms of juvenile delinquency are dishonesty, cheating, lying, stealing, truancy, vagrancy,

intoxication, sexual delinquency, prostitution, and attempts at homicide or suicide. Up to fourteen years of age, delinquency consists mostly of offenses against property resulting from a desire for the fun and excitement that these give. To the older child or young adolescent, it is fun to

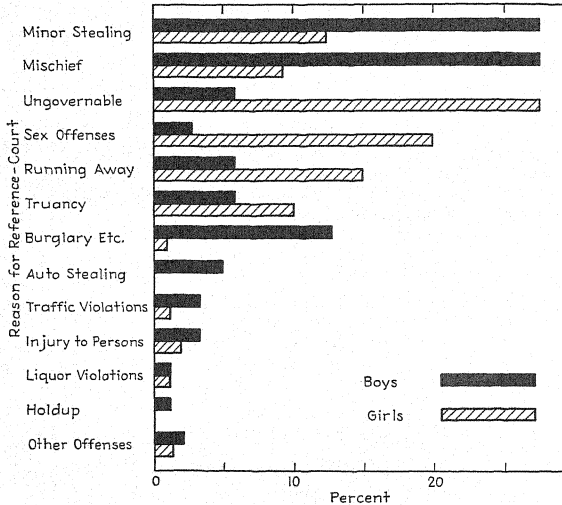

FIG. 76. Relative importance of reasons for reference of boys and girls to 143 juvenile courts in 1931. Based on data of the United States Children's Bureau. (*From F. K. Shuttleworth, The adolescent period. Monogr. Soc. Res. Child Develpm.*, 1938, **3**, *No.* 3. *Used by permission.*)

annoy others and to see if one can break laws without being caught. This shows a misdirected outlet for self-assertion which, if allowed to be repeated, will settle into a habit. Offenses against persons in the form of sexual irregularities, intoxication, suicides, and homicides are most common in late adolescence. Among boys, destruction of property and injury to person are very common, while girls' delinquency more often takes the form of petty stealing of ornaments and clothes, lies, and deceptions. In Fig. 76 are shown the most common offenses of boys and girls in 143 juvenile courts.

CHAPTER XIII

SOME CHILDHOOD INTERESTS

An interest is an acquired motive which drives the individual to act in accordance with that interest. What interests the individual will acquire will depend to a large extent upon his environment, especially the environment of his childhood years. It is this environment that offers him the opportunity to develop certain interests and cuts him off from the opportunities to develop other interests, which might prove to be more satisfying to him. As the environment of the child broadens to include his school, his neighborhood, his community, and finally the whole world, new opportunities are opened up for the acquisition of other interests. That is why many of the interests of childhood are abandoned and are replaced by other interests as the child emerges from childhood into adolescence, and then into maturity.

How markedly children's interests change has been brought out in a study by Wilson (1938), who, through the use of a questionnaire, investigated the interests of children in grades 5 through 10. In grades 5 and 6, the children showed a strong interest in nature, the physical world, science, and mechanics but very little interest in vocations, politics, religion, marriage, and sex. The ninth- and tenth-grade children, by contrast, showed their greatest interest in personal affairs other than people, religion, and politics. They had few interests in school life, animals, nature, and the physical world.

In addition to environmental opportunities, the child's interests are also influenced by the level of his intelligence, by his sex, his racial and socioeconomic status, and any abilities or disabilities of a fairly marked degree which he may happen to have. Because of the many variables which influence the development of a child's interests, there are marked individual differences in the interests of children, just as there are among adults. There are, however, certain interests which are commonly found among children of our American culture and which are fostered by environmental influences that are fairly universal in this culture. These are the interests which will be discussed in the following pages.

CHILDREN'S WISHES

A study of children's wishes gives clues to their interests. When asked what they would like to have if they could have anything they

wanted, most children state very frankly wishes for things that interest them most. An analysis of these wishes gives a clue to the personality of the child, as well as to the state of maturity he has attained. The culture and socioeconomic background of the individual, according to Wilson (1939), affect a person's wishes not only in maturity but also in early life.

When Jersild, Markey, and Jersild (1933) asked five- to twelve-year-olds what they would wish for if their wishes could come true, they found the largest group of wishes (48.3 per cent) was for material objects and possessions, such as toys, playthings, money, and material improvements in the home. The next largest group of wishes (11.4 per cent) dealt with family relationships and companionships (having a sibling or having friends), followed by wishes for personal self-aggrandizement or self-improvement (10.6 per cent). A comparison of children of different ages showed a marked decline in wishes for material objects as they grew older—61 per cent at the ages of five to six, as compared with 25 per cent at the ages of eleven to twelve.

A similar finding was reported by Wilson (1938), who noted a marked decrease in wishes for specific material objects and possessions as children grew older. Fifty-five per cent of the wishes of five- to six-year-olds were of this type, as compared with 14 per cent for eleven- to twelve-year-olds, and 1.6 per cent for college students. Among young children, Witty and Kopel (1939) noted, wishes for school success, more schooling, freedom from present responsibilities, and personal or parental happiness are expressed only infrequently, as compared with the expressed wishes of older children.

Sex differences in wishes were noted by Witty and Kopel also. Girls in the primary grades frequently expressed wishes for clothing and, as they grew older, for fame, leadership, and high social position. Boys were more interested in wealth and in proficiency in a skilled occupation. To determine the effect of racial background on wishes, Gray (1944*a*) compared the wishes of Negro elementary-school children with those reported by Boynton (1936) for white children. The major emphasis of the Negro children was on material possessions, as bicycles, clothes, homes, pianos, and automobiles, as was true also for white children of similar ages. The Negro children expressed only two abstract wishes—for health and education—as compared with three—for health, happiness, and education—as expressed by the white children.

Emphasis on the social characteristic of wishes was stressed by Zeligs (1942) who studies sixth-grade boys and girls. The most common wishes they expressed, in order of frequency, were world peace, family health, success in school, family happiness, long life for the family, and

father's success in business. The least frequently expressed wishes related to material possessions.

RELIGION

Religion is, according to Webster's dictionary, "the outward act or form by which men indicate recognition of a god or gods to whom obedience and honor are due." It involves a desire for help, security, and consolation not given by the world, a dependence on a power outside of oneself, a feeling of confidence in the power appealed to, and an emotional reaction of a reverential sort. *Religion includes two elements, belief and practice.* Both of these are important not only in childhood but also in adolescence. At different ages, however, the relative importance of the two is not the same.

Religion is a product of the child's environment and is developed partly by the example set by parents, as in the case of churchgoing and grace at meals, and partly by direct, formal religious instruction in the home, Sunday school, or church. Of the two elements of religion, belief and practice, major emphasis is placed on the latter. To the little child, religion is ritual. He learns to pray at home and later learns the ritual of the faith of his parents through Sunday-school or church attendance.

Ligon (1939) maintains that a healthy-minded religion should help children to work out the following problems at the ages given:

Two to four: confidence in people and things.
Four to six: cooperation.
Six to eight: sensitiveness to criticism.
Eight to ten: fear of failure.
Ten to twelve: positive attitudes toward goodness.
Twelve to fourteen: venturesomeness in work.

Religious Training. Among primitive peoples, religious training is included in the public ceremonies of the tribes. They recognize adolescence as the age for religious instruction, and they expect the adolescent to accept the religion of the tribe at that time. This implies that they regard religion as too complex for children and thus defer instruction along religious lines until the child is old enough to comprehend its meaning. The age of religious comprehension is, for them, the age of puberty.

This attitude contrasts markedly with Christian and many other religions, which start religious instruction as soon as the child can comprehend words. This is generally given as preparation for admission to the church and is so theological that it is usually far beyond the ability of the little child to understand.

Because so many adolescent boys and girls become skeptics and agnostics, many parents try to forestall this by rigid religious training in child-

hood, on the theory that, if religious concepts are fully established before the age of skepticism, it will eliminate the trouble that comes when doubts arise. This, however, is usually not the case. The more rigid and dogmatic the training in childhood, the more likely the adolescent is to doubt the religious concepts he had formerly accepted in an unquestioning fashion.

Religious beliefs are, for the most part, meaningless to the child. Through religious teachings, he absorbs ideas, phrases, and theories which are far beyond his comprehension, because they are vague and abstract instead of definite and concrete. Even the language of religion is different from everyday speech, and this adds to the difficulties of comprehension. Most religious beliefs are taught in a dogmatic fashion and are so remote from the child's everyday life that they lack the interest and glamour of fairy tales. The result is that they do not appeal to the child as much as religious ritual.

Because the child is not a miniature adult in mental make-up, a religion that is suited to an adult is no more suited to a child than are adult stories. If religion is to mean anything to a child, it should not only be concrete in form and presented in language that the child uses constantly, and thus can understand, but it should also be presented in a less dogmatic fashion than is usually the case. The child wants to satisfy his curiosity by asking questions. Religious instruction should provide for this if it is to fulfill its purpose.

The effect of Sunday-school and church attendance on religious ideas and attitudes has been investigated by Wheeler and Wheeler (1945). Those who attend, they found, did 43 per cent better on a factual question than those who never attended. The least difference between the groups was found on facts concerning the Christmas season, such as the sign of Christmas Day, Christ's birthplace, and the Mother of Jesus. The Christmas season was found to be better known to both groups than the Easter season.

The nonchurch group did not have as functional or mature an interpretation of God as the church group had. There was a tendency for the former to interpret God as a King rather than a loving Father, and to think of Him as a person sitting on a throne ruling the earth like a great king. In addition, the nonchurch group tended to feel that God stops loving them when they are bad, that God loves only those who worship Him, and that God will refuse to help them if they fail to thank Him.

Hartshorne and Lotz (1932) made an analysis of stenographic records of the proceedings of 100 of the better church schools in the United States. Their analysis showed that the classwork of the teachers was

almost entirely factual, with major emphasis on formal rote learning and dogmatic instruction. Only 22 per cent of the teachers made any attempt to measure the results of their instruction. Because the emphasis was placed on authoritative instruction, the children had no opportunity to question what they were taught. They were forced to accept what they learned on a passive basis. Faith was expected to supplant reason.

Curiosity about Religious Subjects. The young child is curious about the universe, as well as about the everyday world in which he lives. He thinks of them as being on an equal basis, and there is no metaphysical meaning associated with them. Between the ages of three and four years, the child's questions often relate to religion. "Who is God?" "Where is heaven?" "How do you get there?" Mysteries centered around birth, death, growth, and the elements are explained in religious terms.

The child accepts almost any answers given to his questions, and these satisfy him temporarily. But, in many cases, they are not adequate later and often lead to doubt and skepticism during the adolescent years. Similarly, stories of heaven, hell, angels, devils, and miracles are accepted on faith. What he believes depends upon what he has been taught at home or in Sunday school. MacLean's (1930) study of children's ideas of God in Protestant religious faiths showed lack of discriminative thought on the children's part. Their ideas were often flatly contradictory, as shown, for instance, by the fact that they believed God to be a wonderful person, but also that he would strike a man dead with a stroke of lightning for profanity. The ideas they held proved to be strikingly similar to those found in Sunday-school literature.

Typical questions about God, asked by boys all less than six years of age, Davis (1932) reported as follows:

God has wings to get down with, hasn't he?
Did Marje see God? (Sister claimed she had.)
Why does God give us pigs to eat?
Does God hear this? (blowing horn)
Is God there? (in Ceylon)

Questions relating to other religious matters reported by Davis were these:

Is Jesus dead now?
Mother, what does "He is risen" mean?
How could the angel know Christ was risen?

Religious Concepts. The religion of the young child is realistic. He thinks of God, angels, the devil, heaven, and hell in terms of the pictures he has seen of them. This was shown a number of years ago by Barnes (1893), who asked more than 1,000 children to write compositions

embodying their ideas of God, heaven, and hell. He found that nearly all of the children under fifteen years of age thought of them in concrete terms. God was represented as a great and good man. He was thought of as old, with a long white beard and flowing white garments. Some had an image of Him as having a crown and wings. Others thought of Him as being very large. Most of the children believed He was ever-present and could see everywhere. Their descriptions showed that they had a definite idea of God's appearance, but the meaning of God was too complex for them to grasp.

How pictures of people and scenes foreign to the child's everyday experience can distort young children's religious concepts has been well illustrated by Murphy's (1937) statement that children are apt to learn of Jesus, "not as an ideal grown-up who helped people, but as a little baby whose mother put him in a straw thing in a barn instead of a crib, and to whom queer-looking men in striped gowns brought presents no baby could use. They learn, too, that there was a bad king, with a ferocious face, of whom the baby's mother was afraid, so that she had to take him a long way from home, riding on an animal that is not seen in the city, nor even in the zoo" (p. 34). Distortions of religious concepts, due to misunderstanding of the words used to describe or explain them, are common in the case of young children. Jersild (1940) gives, as an example of this, the case of a young child who told his mother about Jesus' 12 bicycles (disciples) and who was puzzled about the "consecrated cross-eyed bear" (consecrated cross, I'd bear) (p. 416).

Because the child tends to regard everything in his environment as *animate*, he interprets religion in that way. He believes that everything is alive and he endows the sun, moon, stars, and all the elements with the same life qualities that human beings have. God, to him, is a man, like any man among his acquaintances. He interprets what he is taught in terms he can understand. By the age of six or seven years, he reserves his animistic beliefs for objects that move, such as the sun and moon.

Children eight years of age and under were questioned by MacLean (1930) to determine what their ideas of God were. He found that 40 per cent of the children thought of Him as a man with flesh and bones and whiskers, while 20 per cent thought of Him as spirit, ghost, or fairy. They believed Him to be "up in the sky" or "in heaven." When asked what God does, the most frequent answers were, "God gives us food and clothing and everything we have—coal and wood and air to breathe" and "God can see right through the roof." They believed God wants "us to be kind and good," to "help mother with her work," and to "obey mother."

The religious attitude of the older child is in many respects similar to that of the young child. Religious concepts, which have been developed as a result of religious instruction, are more often vague than wrong. A good illustration of how *confusing* religious concepts may be to the child is shown by an example given by Watson (1924). A primary teacher who was teaching the Lord's Prayer to a group of mission children said, "This is such a beautiful prayer. I love the way it starts, 'Our Father.' We have fathers, haven't we?" "Yes," answered one peaked little girl. "My father slaps my mother and pulls her hair, and swears at us somethin' awful." Because the child builds up concepts about unknown people, places, and situations in terms of those he knows, it is not surprising that his concepts about the unknown as taught him in his religious instruction become confused with already developed concepts.

Through the use of a free-association test, Bose (1929) studied the clarification of religious concepts in the case of boys and girls, eight to eighteen years old, in church schools. He found a vagueness and confusion of meanings in the concepts relating to spiritual experiences, as "conversion," "Christian," and "Saviour," while concepts relating to special religious days or places, as "Christmas," "Sunday," and "church," were clear and definite. Pronounced development in the meaning of religious concepts came from the ages of eight to fifteen years, but little development appeared after the age of fifteen.

One of the earliest investigations of religious concepts of school children was made by G. Stanley Hall (1891) in his study *The contents of children's minds on entering school.* Answers given to questions revealed definite and clear-cut concepts of God, heaven, and hell. The following reply to a question about heaven is typical of the way children of this age think of heaven: "When children get there, they have candy, rocking horses, guns, and everything in the toy shop or picture book, play marbles, tops, ball, cards, hookey, hear brass bands, have nice clothes, gold watches, and pets, ice cream and soda water, and no school."

Many different concepts of God were reported by Case (1921). Some of the youth thought of Him as the Great Magician, some as the Great Provider, some as the Great Detective, some as the Despot, and some as a loving Father, helping them and others. Mudge (1923) reports that of several hundred boys and girls of the ages six to fourteen years, 77 per cent stated that they had a clear visual image of God. Of 170 college undergraduates who were questioned, 139 recalled a distinctly visual and antropomorphic image of God in late childhood. In all but 22 of these cases, the images were attributed to pictures seen in childhood and to the teaching of older people. Those who recalled a distinct image of God's face recalled it as follows:

Kindly	55
Stern	17
Sometimes kindly and sometimes stern	14

Children nine to fourteen years of age, when given a true-false test of religious statements by MacLean (1930), indicated that their ideas of God included the following beliefs: "God knows everything that ever was and ever happened and everything that ever will happen"; "God is like Jesus, the best, kindest, and wisest man that ever lived"; "God's place of abode is everywhere, in the wind, sun, plants, animals, in man, up in the stars, and in the world; God feeds and cares for us, the animals, birds, and insects because He loves them every one; God wants us to love our neighbors, to be just as nice to Negroes, laborers, laundrymen, and maids as we are to our neighbors, and to give everybody in the world a chance to get an education."

A study of boys and girls of all denominations brought out the fact that religious concepts are similar in all of them, according to Leuba (1916). Descriptions of God's appearance were of the conventional type, as an old man with long white hair and beard, white robes, and a kindly face. More than 75 per cent of the youth studied placed God's abode in heaven. God's activities consist of being creator, controller of natural phenomena, and provider of food and clothing.

Betts (1929) asked 480 ministers and 240 students of five denominations about the religious instruction they would give to children. He found that 33 per cent of the ministers and 25 per cent of the students said they would teach that God is angry when we do wrong. Of the group, 16 per cent of the ministers and 6 per cent of the students said they would teach that God sends storms, earthquakes, and sickness to punish people for sins. With teaching of this type, it is not surprising that the child develops the definite and concrete concepts that he does.

To determine whether there is a pattern in the development of religious concepts, Harms (1944) conducted an experiment in which entire classes of school children of various ages were asked to try to imagine how God would look to them. Then they were asked to draw a picture on paper showing what had come to their minds, together with a statement of what the picture represented. From an analysis of these drawings, Harms concluded that the normal development of each individual within our civilization goes through three stages of religious development. These he listed as follows:

1. The *fairy-tale stage*, between the ages of three and six years. In this stage, all pictures had one common characteristic. The children expressed their version of the deity as a fairy-tale conception. The child's God experiences were distinguished from his usual fairy-tale experience by a kind of awe that the child had for the high and exalted.

2. The *realistic stage*, which begins when the child enters school and continues through the elementary-school age. The child's concept of God now turns from a fairy-tale type into a definite reality. At this age, the child seems willing to adapt himself to institutionalized religion and its teaching. Symbols now most frequently represent God, such as the crucifix and the Jewish star. Next in frequency were pictures of priests or priestlike persons representing mediators of God. Angels and saints were represented as human figures.

3. The *individualistic stage*, during adolescence, in which no one specific religious concept is shown but rather manifold types of expression. The three common types are (*a*) religious imagination expressed in a conventional and conservative way according to the existing cult forms, with no original religious fantasy; (*b*) more originality shown, resulting from a strong consciousness of the basic individualistic character of religious experience; and (*c*) originality far removed from the adolescent's religious environment.

Religious Attitudes. The young child is *reverent* in his attitude toward religion. To him, the pageantry of the religious service and the beauty of the church decorations are awe-inspiring. When taught to regard these in a reverent manner, he does so and thus derives a feeling of security from them.

Typically, the religion of little children is *egocentric* and self-seeking. To them, prayers and worship are means of attaining some childish desire and their attitude is primarily one of being good because of the reward to be obtained. This attitude is in keeping with the child's personality. As he is accustomed to having things done for him by adults, just so he visualizes God as a person who will do things for him. To the young child, for example, Christmas is a time to receive toys and gifts, and not the time when giving to others means much to him.

Religion at this age is *formal*. This is due to the fact that in the early religious training of the child emphasis is generally placed on the verbal aspects of religion. The child learns to recite stereotyped phrases, as "God is Love," and to say his prayers, even though he does not know what they mean. The very words he learns to recite are different from those used in everyday speech, with the result that the meaning of the thought is lost to him. Any attempt to simplify this merely adds to the child's confusion.

The religion of the older child, like that of the young child, is *egocentric*. This is well illustrated in the study made by Freeman (1931) of first-grade pupils' concepts of Christmas. They believed Christmas to be an occasion to appease their acquisitive tendencies to a pitch of greediness. As Freeman pointed out, all were "strong on getting," with very little thought of "giving." Typical reactions were as follows: "Last Christmas

I got a tricycle and the next year I got a mamma doll." "I like Christmas because Santa has brought me a wagon and a new brown suit."

Little sentiment or emotionality accompanies religion at this age, because religion is an impersonal experience. Sermons, to make their appeal to youth, must be *concrete*. The stories and illustrations must be specific in application. Religion, to the child, is a means of self-improvement, of avoiding sin and its consequences. His attitude is not affected by an emotional element, which colors the attitude of the adolescent or the adult. Even the thought of sin or punishment is impersonal and unemotional.

Religious Stories. The stories in the Bible have marked appeal for the child in much the same way as fairy stories do. They relate to people, countries, and situations so different from those of the child's everyday environment that he enjoys hearing certain of the Bible stories time after time, just as he enjoys a repetition of his favorite fairy stories. Interest in persons is always greater than interest in doctrines, though at different ages, children show preferences for different parts of the Bible. Dawson (1900), in a study made in 1900, noted that up to eight or nine years of age, children's preferences were for stories relating to the birth and childhood of Jesus and the childhood of such characters as Samuel, Moses, Joseph, and David, while from nine to fourteen years, the historical books of the Old Testament had the greatest appeal.

Religious Doubt. While most young children accept religious teachings on faith, and believe implicitly whatever they are taught, whether it be in answer to their questions or merely as a part of the routine religious instruction at home or in Sunday school, there are times when almost every child expresses doubt. This, Starbuck (1897) found, was apt to occur when the children's prayers were not answered. Religious doubt is more frequently experienced by very bright children than by those whose intellectual development is of a lower order. When the young child does question his religious teaching, his reactions are unemotional and objective. When the episode that gave rise to the doubt is passed, his doubt likewise passes and is quickly forgotten.

The older child is often confused about denominational differences in religion and questions which doctrines are right. Likewise, he may become critical of some of the religious concepts he learned when he was a little child. Case (1921) found that the inadequacies and inconsistencies in the teachings about God are often recognized by the older child and thus lead to questioning or attempts at reconciliation on their part. Very often, however, the critical attitude is assumed because the child enjoys asking questions to put the Sunday-school teacher "on the spot." What thus appears to be religious doubt is in reality little more than a form of smartness.

How superficial the critical attitude of the child is may be seen by the fact that he is not worried or distressed because he cannot or will not accept in an uncritical fashion what is taught him. He forgets the whole matter after Sunday school is over. This contrasts markedly with the adolescent, who ponders over the matter and becomes emotionally disturbed when religious concepts conflict with scientific or pseudoscientific ones.

Children's Prayers. Almost as soon as a little child can pronounce words, the average parent believes it is time for him to learn to say his prayers at night before going to sleep. Most children accept the idea of praying as a part of the routine of going to bed and only occasionally take an irreverent attitude toward it. If the child is taught to end his prayer with the plea, "God bless Mommy, God bless Daddy," and this is repeated for all his friends and relatives, the prayer has somewhat more of a personal meaning for him than it otherwise would have, though the meaning of the word "bless" is unknown to the child.

In an analysis of books of prayers prepared by leaders in religious education for the use of young children, Fahs (1932) has classified the ideas which these prayers contain into three categories. Each of these relates to specific things which the child seeks through prayer, as follows:

1. Variety and abundance of the good things of life for which little children are encouraged to thank God. These blessings range from "the morning light" to the "clothes we wear." This idea is expressed in grace said at the table. An example of this type of prayer is

> For my big ball and kiddie car
> On which I ride so fast and far
> Thank you, Father, thank you.

2. Direct petitions for special privileges, such as protection and care, especially during the night, and for guidance. This is illustrated by the child's favorite prayer:

> Now I lay me down to sleep,
> I pray thee, Lord, my soul to keep.
> If I should die before I wake,
> I pray thee, Lord, my soul to take.
> If I should live for other days,
> I pray thee, Lord, to guide my ways.

3. Prayers for personal help in doing things which the children are led to believe they cannot achieve by themselves, such as,

> Father lead me day by day
> Ever in thine own sweet way.
> If I'm tempted to do wrong
> Make me steadfast, wise, and strong.
> Show me what I ought to do,
> Teach me to be pure and true.

When MacLean (1930) asked children under eight years of age why people pray to God, the most frequent answers he received were "You can talk to God when you pray," "We pray so God will be with us all the time to keep us from doing wrong," "We don't have to talk out loud to God. He hears us just as well when we only think," and "God talks to us and tells us what to do."

By the older child, prayer is regarded primarily as a means to an end. The major emphasis is on asking favors which will satisfy the one who asks for them. At no time does the prayer have a mystical significance. MacLean's (1930) study of nine- to fourteen-year-olds showed that a large proportion of the children's prayers emphasized help in doing right and avoiding wrong, help in getting what they wanted, rather than requests for concrete gifts. The spontaneous, unlearned prayers of children, Fahs (1932) found, show their real desires, which are sometimes surprising or even shocking to parents. For example, an awkward boy, finding himself inferior in sports to his schoolmates, prayed, "O God, help me to run fast."

Religious Services. Religious services in Sunday school or church may appeal to the child because of their colorful pageantry. He usually likes to sing, and the ritual of the church service intrigues him. He enjoys looking around at people at worship, to see what they are doing. His attitude is a strange mixture of awed reverence and curiosity. J. J. Smith (1941) has pointed out that, because there is a tendency for the child to be active, he should be an active participant in religious expressions, such as singing hymns and participating in religious dramas and religious festivals at Christmas and Easter, and in rendering social service in the name of religion.

When the novelty of the service wears off, the child begins to rebel against church attendance. He enjoys going to Sunday school only so long as his friends go, too. He likes young people's organizations, such as gymnasiums in the cities and "sociables" in small communities, picnics, holiday celebrations, and outings. His interest is thus primarily social rather than religious.

At this point, a rather small percentage of boys and girls *attend* Sunday school and an even smaller percentage go to church. Because the number varies from one community to another, it is impossible to give definite statistics. As a general principle, however, the percentage becomes smaller as the community becomes larger. That is, in large cities a smaller percentage of children attend religious services than are found to do so in small towns or country villages.

The explanation for this is that parents as a rule do not attend religious services, except on special occasions at holiday time, and consequently

their sons and daughters rebel against going, unless their friends attend. In small communities, more adults go to church because it is the customary thing to do, and they in turn insist that their children go also. In a study of children of different degrees of intelligence, Lehman and Witty (1928) found that dull pupils showed more interest in religious activities,

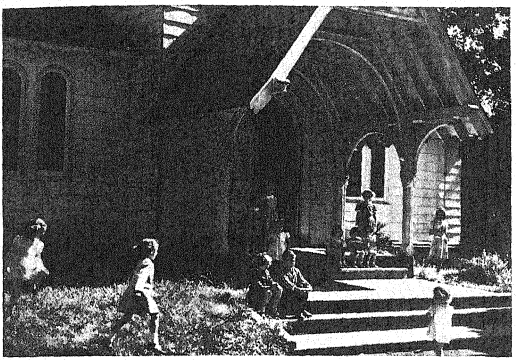

FIG. 77. The child enjoys going to Sunday school so long as his friends go. (*Courtesy of Carroll Van Ark and Woman's Day.*)

such as playing Sunday school, than bright ones did. They also spent more time going to Sunday school and church.

SEX

It was formerly believed that the child was asexual and that sex behavior was dormant until puberty. Any behavior related to sex was regarded as abnormal or as a sign of precocious sexual development. Likewise, any emotional reaction that related to sex was believed to be dormant until puberty. When sex emotions appeared, this was regarded as an indication of the end of childhood and the beginning of maturity.

Freud's Theory. Freud (1920) first recognized that sexuality appears in childhood. This is well expressed in his statement that "From the third year on, there is no longer any doubt concerning the presence of a sexual life in the child" (p. 281). He further contended that childhood sexuality is responsible for the type of mature sexuality attained in adult years. Any interference with the normal sex life of the child, he believed, would result in some form of abnormal sex behavior in adult years.

In addition to this, Freud was the first to recognize the fact that the

sex development of the individual follows a pattern as definite and predictable in form as the pattern of development of other aspects of the child's life. This pattern, Freud contended, consists of stages toward the goal of mature sexuality.

In the "neutral" period, from birth to three years, the child is concerned with himself and often engages in autoerotic practices, such as sucking his thumb or playing with the genitals. Following this comes the "undifferentiated" stage, in which the child is interested in others and makes no distinction between male and female. Attachment to the mother or father now spreads to the playmates. This extends from the third to the sixth year. In the third period, from six to twelve years, the child's affection spreads to teachers and chums of the same sex, with a strongly antagonistic attitude toward members of the opposite sex. Finally, in adolescence, sex interest shifts to the opposite sex, at first in the form of "hero-worship" of older persons, and then to those of the same age. The first love to develop is thus, "mother love," or love for the mother, and the last, "sex love."

Sexuality in Childhood. It is now known not only that there is sexuality in childhood but that it differs markedly from the sexuality that occurs after the puberty changes have taken place. As contrasted with the definite and focalized sexuality of adolescence, it is of a generalized and diffused sort. Likewise, while sexuality is a dominant factor in the life of the adolescent and has a wide influence on his behavior, in the child it is of only secondary importance and plays a relatively inconspicuous role in his life.

Sensitivity in the genital region during the early years of life has been reported as an indication of early sexuality. Moll (1923) refers to the fact that erections of the penis occur in childhood and have been observed even in infancy. He mentioned as possible causes for this external irritations, distention of the full bladder and internal stimuli connected with the development of the genital organs.

Conn (1940*a*) questioned parents about erections in their boys. Of the group of over 100 boys studied, spontaneous erections were seen in 36.7 per cent. The earliest was traced to two months of age, while the rest, for the most part, were seen during the first five years. The circumstances under which spontaneous erections were observed were reported as fullness of the bladder and bathing. There was no reference to sexual thoughts.

In a study of nine male babies, of ages three to twenty weeks, Halverson (1940) noted that tumescence was exhibited at least once daily by seven of the nine. Tumescence was accompanied, in a large percentage of instances, by restlessness, fretting, crying, stretching, and flexing the

limbs stiffly. The behavior following detumescence was in the nature of playful activity or relaxation.

Love Object. The young baby's first love is for himself. In this *autoerotic* stage, which lasts for the first five or six months of life, the baby shows no attachment for others. The first object of attachment is the *mother, nurse,* or *person who takes care of the child.* Gradually, during the babyhood years, love attachments are extended to other members of the home environment, whether members of the family or servants. The strongest attachments are for those who make the child's associations especially happy. Even household pets and toys may become the object of the young child's affection. Often, the attachment to a pet or a toy and the affection for it are stronger than the love directed toward persons.

When the child begins to play with *other children,* he singles out one or two children and develops a strong emotional attachment for them. At first, the affection is directed toward an older child who, like the adult, makes the child the center of attention. Because associations of this sort are pleasant to the child, he builds up an affectionate attitude toward his playmate. At the end of the preschool age, as children of the same age learn to play together in an amicable fashion, the child singles out one or two children of his own age, for whom he shows real affection. Like his associations with adults for whom he has an affectionate attachment, his contacts with the children he loves are always pleasant.

Preference for One Sex. Which sex the young child favors will depend to a large extent upon his associations. In the case of adults, the baby and the very young child most often favor the female members of the household because their most frequent associations are with them. Later, should the male members of the home prove to be more indulgent, the child may transfer his affection to father, uncles, or older brothers. Little girls very often show a preference for fathers and brothers, while little boys show a preference for their mothers and sisters. This may be explained by the treatment they receive from the different members of the home group.

In the choice of playmates of their own age, little children play with members of both sexes. Even in the preschool groups, there is a tendency toward unisexual friendships, as was stressed in the chapter on social development. This increases as the child grows older, with the result that, by the time the child reaches kindergarten or first grade, there is a marked tendency for boys to prefer boys, and girls to prefer girls. Girls will include boys in their play more readily than boys will include girls. But, as was pointed out in the chapter on Social Development, more quarrels occur in mixed than in unisexual groups.

In a study of the social sex development of the child, Campbell (1939)

noted the following characteristics of the sex development of children, five to eight years of age:

1. Children will play with boys or girls and are not embarrassed when found with members of the opposite sex.
2. They are not embarrassed by physical affection from adults or by physical contact with members of the opposite sex.
3. They are not self-conscious about their bodies and they show no signs of modesty.
4. Boys and girls fight one another.
5. Boys show no special courtesy toward women.
6. They do not differentiate play or work as "girl's" or "boy's."

Expressions of Affection. The expressions of affection for the loved one consist of patting, fondling, or kissing, and a desire for close, personal contact. This may take the extreme form of following the loved one wherever she goes and raising stormy protests if this is impossible, as when the mother or the nurse leaves the house without taking the child along. Pets and favorite toys are caressed, hugged, kissed, and carried around wherever the young child goes until they literally fall to pieces. If permitted to do so, the child takes a beloved toy to bed and hugs it in his arms, even while asleep.

Shirley (1933) refers to reports by mothers of the earliest signs of affection in the behavior of babies. This is shown by patting the mother's breast while nursing and by cuddling down contentedly when held at the mother's shoulder. During the seventh and eighth months, the mothers reported that the babies showed affection by patting the mother's face, turning their cheeks to be kissed, clasping the mother around the neck, laying their cheeks on the mother's, hugging, and biting. The expressions of affection through patting and hugging, Shirley believed to be spontaneous, while the other expressions were taught the babies by their parents.

Expressions of affection in young children are of brief duration. Children may show great fondness for a person while that person is present, but as soon as the individual leaves, he or she is forgotten. It is definitely a case of "out of sight, out of mind." When a beloved member of the family leaves the home, as in the case of death or divorce, or when the nurse leaves the household, the young child never seems to miss the person. He soon transfers his affection to an individual who is present and forgets about the former individual who had dominated his affection.

Sex Antagonism. From six to twelve years of age, there is a gradual development of an attitude of antagonism between the sexes. Boys and girls who formerly played together in an amicable fashion begin, during the first or second grade of school, to play more predominantly with individuals of their own sex. And with the growth of interest in play activi-

ties of members of their own sex comes the attitude, on the part of boys, that girls' play is "silly" or "sissified," while girls regard boys' play as "rowdy" or "hoodlum." It is not surprising, then, to find that antagonisms between the two sexes that grew up in relation to play activities develop into a general attitude of antagonism toward the opposite sex.

Furfey (1930) noted that up to the age of approximately eight years, boys mingle freely with girls. Their interests are similar, and they fight and play together without consciousness of sex. At the age of six years, at least 73 per cent of the boys observed by Furfey still played with girls. From the time the boys were eight to eleven years old until they reached puberty, there was a strong distaste for playing with girls, and only 20 per cent of the boys did so. Lehman and Witty (1927*d*) found that from six to twelve years there is a definite tendency for unisexual play, and games at this age are sex-linked.

Age of Sex Antagonism. The "age of antagonism" extends from approximately the eighth year to the onset of puberty, which comes, on the average, between the twelfth and the fourteenth year. Instead of decreasing as the child reaches puberty, the antagonistic attitude becomes increasingly more pronounced, resulting in many quarrels between the sexes. This occurs even in the case of brothers and sisters who, as younger children, had been the best of friends. It is a difficult age to cope with in a household where there are both boys and girls, and any attempt to throw the two sexes together in social gatherings is almost certain to meet with failure.

To determine how great the social distance is between the sexes at different ages, Koch (1944) studied groups of children from nursery school through high school. Among the preschool and grade-school groups she noted that children showed a preference for individuals of their own sex. The distance between the sexes increased with age until high school, when a conspicuous decrease was noted. When grade-school girls were asked to express a preference between a boy and a girl classmate, they tended to choose the girl more frequently than boys of that age chose the boy. The difference in strength of the bias of the two sexes decreased with age until the relationship in high school was reversed and the boys expressed a preference for each other more frequently than the girls did.

Cause of Sex Antagonism. There is, in this antagonism between the two sexes, *no indication of a physiological cause.* Rather, the cause is *social,* and the blame can be placed on the early training in play activities which puts emphasis on different play for the two sexes. An increase in the antagonism comes from the fact that, instead of taking the attitude of "live and let live," boys delight in teasing, tormenting, and interfering with girls' play, while girls, in self-defense, never miss an opportunity to

get their revenge by telling tales on boys at home or in school. It is not surprising, then, to discover that, even in the household, quarrels between brothers and sisters are far more common than expressions of affection.

Effect on Behavior. As a result of this antagonistic behavior, the two sexes spontaneously draw apart. Even in school classes where both

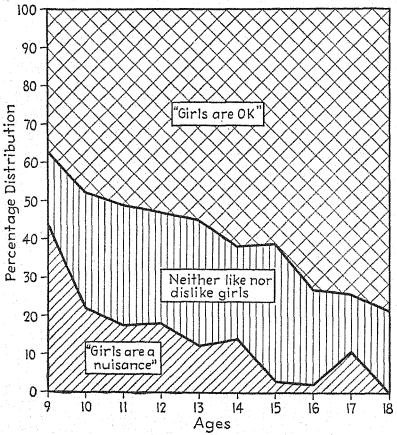

FIG. 78. Anonymous reactions of seven hundred boys, age nine to eighteen, to a question concerning their attitude toward girls. (*Based on unpublished data of R. T. Sollenberger. From F. K. Shuttleworth, The adolescent period. Monogr. Soc. Res. Child Develpm.*, 1938, **3**, *No.* 3. *Used by permission.*)

sexes are taught together, boys prefer to sit on one side of the room and girls on the other. During recess, before and after school, the boys group together, as do the girls, and avoid one another as much as possible. Any attempt to bring them together, as in parties, arouses a storm of protest on both sides. Even when brought together in family gatherings, boys and girls of this age are barely civil to one another. Sex antagonism is so extreme in boys that they do not want anything that resembles a girl. Figure 78 shows graphically the typical attitude of boys toward girls at this age.

Among girls, the antagonistic attitude toward boys is *less pronounced* than in the case of boys. As a matter of fact, it is more nearly an attitude

of indifference than of active antagonism in situations in which the girls ignore the boys, instead of tormenting them. They regard boys as rough, dirty, vulgar, and ill-mannered, and their play as boresome. But, if left alone, they pay no attention to the boys. Likewise, instead of making fun of love in others, as boys do, their attitude is one of indifference.

Campbell (1939) has listed the following characteristic forms of behavior at this age: girls, by the eleventh year, are self-conscious when they touch boys, and boys react in a similar way at twelve years; boys will play games with girls only if other boys are present; boys tease and make derogatory remarks about girls, and also about boys who are interested in girls. Maller (1929), in a study of cooperation and competition in children from two to fourteen years of age, found that work for one's own sex supersedes work for oneself, one's school class, or one's team. This, he contended, shows the strength of unisexual interest.

Smith (1939) had 100 boys and 100 girls in each age group from eight to fifteen years vote on whether boys or girls possess to a greater degree each of 19 desirable and 14 undesirable traits. He found that, with an increase in age, boys have a progressively poorer relative opinion of the girls and a progressively better opinion of themselves. The girls had a progressively better relative opinion of the boys and a progressively poorer opinion of themselves. By the age of fourteen years, the girls thought almost as well of the boys as of themselves. Both boys and girls, Smith observed, were more likely to assign good traits to their own sex than to assign bad traits to the other sex.

Childhood Romances. During childhood, *an occasional romance* between a boy and a girl grows up. There is, in this type of romance, an attitude of affection and respect on the part of the boy, accompanied by a desire to serve the beloved (see Fig. 79). This may consist merely of carrying her books to and from school and protecting her from the teasing and torments of a boys' gang. It differs markedly from adolescent romances in that there is no physical expression of affection, other than perhaps an occasional shy holding of hands. The attitude of the girl toward the boy may be likewise one of deep affection, but there is no desire on her part for physical demonstrations of this affection.

Girls are more tolerant in their attitude toward childhood romances than are boys. They may snicker at and make jokes about the girl who is engaged in such a romance, but they do not exclude her from their group, as the boy is excluded from the boys' gang. In many instances, there is definite evidence that they are envious of the girl who has a boy to accompany her to school, and who receives thoughtful attentions instead of the annoyances that they have been accustomed to receive from other boys.

FIG. 79. Childhood romance. (*My Baby Magazine. Used by permission.*)

Curiosity about Sex. In the process of exploring his body, the baby sooner or later touches his sex organs. He then discovers that this results in a pleasurable sensation. By chance, he discovers his navel and derives fun from putting his finger in the "hole." Other than that, sex arouses no curiosity on his part until approximately the end of the third year, when the boy notices that his body differs from that of the little girl, that he stands up when he goes to the toilet while she sits down, and that adults have certain physical features, such as "bumps" and hair on the body, which little children do not have. He therefore asks straightforward, frank questions about these facts that mystify him and arouse his curiosity.

When a new baby arrives in his household or in the neighborhood, he is naturally curious to know where it came from. Any explanation that is logical he will accept, and this will satisfy his curiosity for the time at least. Later, around the fourth or the fifth year, he may wonder why his

parents sleep in the same room while adults who are not married sleep in separate rooms. If he has ever accidentally witnessed intercourse between animals or adults, he is curious to know "what they are doing." His attitude throughout is completely impersonal and objective, with none of the morbid interest that one associates with adolescent curiosity.

Six-year-olds, according to Alpert (1941), show an active and frank curiosity about sex matters, more far-reaching in scope than that shown by preschool children. They are definitely aware of differences in the body structure of the two sexes and seek an explanation for this difference. This curiosity is not purely intellectual, but has a strong emotional drive.

As children grow older, sexual curiosity becomes disguised and less outspoken. The curiosity and interest remain aggressive, however, and are often of a sadistic nature. They may even take on an obsessional character and remain confined in scope.

Through the use of the play technique, Conn (1948) obtained information concerning the child's awareness of and attitude toward the origin of babies in the case of boys and girls ranging in age from four to eleven years. The preschool children (four- to six-year-olds) frequently referred to God as the source of babies and spoke of them as being bought from stores. About one-third spoke of the hospital as the place where babies are obtained.

Nearly one-half of the seven- to eight-year-olds had been informed that doctors bring babies and that babies come from hospitals. Nearly one-third had been introduced to the concept of seeds and eggs and had been told that the mother is sick before the baby comes. At this time, there is an increasing emphasis and curiosity concerning the mother's role in the coming of the baby.

Nine- to eleven-year-olds have heard their playmates discuss various conceptions of the origin of babies—in a few cases, about the concept of genital contact. There was a tendency for the more intelligent child to receive more items of sex information, to recall more of these, and to focus his attention at an earlier age upon the body of the mother as a probable source of the baby than was true of children of average or below-average intelligence.

In spite of the child's curiosity about sex, Gardner (1944) maintains that there is an almost universal resistance on the part of children to the acceptance of the truth regarding sex. This resistance comes from fears due to (1) the alliance of the genital and urinary tracts, and the close proximity of both to the lower end of the gastrointestinal tract; (2) punishment and prohibition of pleasurable sensations that come from

the stimulation of the genital areas, fear of mental dullness, insanity, or loss of strength; and (3) fear of injuring someone through sex aggression.

Questions about Sex. As Conn (1940*a*) has pointed out, "all children, at one time or another, ask questions concerning a variety of topics. It is therefore not surprising that they also include questions about the topic of sex." But, when the topic of sex is raised, parents frequently become embarrassed or even shocked, in spite of the fact that the parent helped the child to express himself on previous occasions. Many parents try to avoid discussions of sex on the grounds that they want to "prevent calamities."

Frequently, the young child inquires about origins, Conn noted, when some external event, such as the arrival of a new baby in the family or in the neighborhood or a litter of kittens, comes to his attention. According to Conn (1948), the average child from the ages of four through twelve years asks his parents less than two questions about sex. Almost one-fourth of all the inquiries reported by him occurred at the age of six years, and slightly more than one-half of the entire number in the early school years, from six to eight.

A definite relationship between the child's intelligence and the number of questions asked about sex was also noted. Up to 85 per cent of the number of boys of superior intelligence responded with questions, 73 per cent of those of average intelligence, and only 62 per cent of those of lower intelligence. Sixty-six per cent of the girls of superior intelligence asked questions about sex, 83 per cent of those of average intelligence, and 52 per cent of those whose intelligence was below average.

Hattendorf (1932) analyzed the questions about sex asked by children, as reported by their parents. The questions were classified in eight groups and ranked according to frequency of occurrence. In Table LXIII are given the different types of questions and the frequency of occurrence at the three age levels studied.

A few of the most representative questions asked were "Where do babies come from?" "Mother, why can't we have a baby?" "How does a baby grow in its mother's stomach?" "Why do mothers go to the hospital?" "Why do men have hair on their bodies?" "Do you have to be married to have a baby?" "Do you have to be married every time you have a baby?"

Typical questions asked by three- to twelve-year-olds, as reported by Davis (1932), were as follows: "Will she have baby birds some day?" "Do the baby deer come out of an egg like the chickens do?" "Does it hurt the baby deer when it comes out of the mother deer?" "Does the baby calf come out of the mother?" "Do they look like little seeds?" (p. 71).

In an analysis of the child's sex vocabulary, as used in questions and statements about sex matters, Conn and Kanner (1947) found that children speak unhesitatingly and without embarrassment of the boys' "thing" and the girl's "thing." All other designations, they noted, had something secret and forbidden about them. Most children had two or three synonyms available and these were used interchangeably. These, for the most part, served as names for both the male and the female genital. Only a few were reserved for the female genital—"puss," "hole," "susie," and "pocketbook." This was true also for

TABLE LXIII. RANK OF INTEREST FOR 865 QUESTIONS OF CHILDREN TWO TO FIVE, 707 QUESTIONS OF CHILDREN SIX TO NINE, AND 191 QUESTIONS OF CHILDREN TEN TO THIRTEEN YEARS CLASSIFIED IN EIGHT GROUPS

Classification	Age, years		
	2 to 5	6 to 9	10 to 13
Origin of babies	1	1	2
Coming of another baby	4	2	1
Intra-uterine growth	7	7	8
Process of birth	5	3	5
Organs and functions	3	4	3
Physical sex differences	2	4	6
Relation of father to reproduction	6	6	4
Marriage	8	8	7

Source: HATTENDORF, K. W. A study of the questions of young children concerning sex; a phase of an experimental approach to parent education. *J. soc. Psychol.*, 1932, **3**, 45. Used by permission.

the male genital, which was frequently referred to as "teapot," "piece of rope," or "hose."

Sex Exploration. Sex curiosity frequently expresses itself in exploration of the sex organs. At the age of six, according to Alpert (1941), mutual exploration is common. The search to discover what the sex organs are and how they function is often carried to dangerous extremes, such as the insertion of short, unclean, or rusty objects into body orifices. "Doctor games" are popular at this age and give the child an excuse to examine the sex organs of his playmates.

Among eight-year-olds, Alpert noted, sex behavior consists of mutual exploration of a homosexual and heterosexual sort, such as matching masculine prowess in the toilet, peeping, smutty jokes, provocative giggling, some masturbation, obscene language, and "secrets" about "boy-girl" favorites. Much the same behavior is observed in children from nine years of age until puberty, except that there is progressively

more provocative heterosexual behavior. Only when the child's curiosity about sex is adequately handled does exploration gradually diminish.

From data obtained in personal interviews with boys, Ramsey (1943*a*) discovered that preadolescent sex play with the female takes a variety of forms. The most frequent form, he found, was manual exploration associated with direct observation of the reproductive anatomy. The next most frequent was exhibitionistic sex play. Other forms included attempts at intercourse, oral contacts, and various other forms of experimentation.

Sex play with members of the same sex, *homosexual* behavior, is likewise a form of sex exploration. Thirty-eight per cent of the preadolescent boys questioned by Ramsey reported that they had engaged in this. Nearly half of them had confined their relationships to one other boy, while the others reported from two to ten partners in their play. Except in rare instances, these partners were boys of the same age. Manual techniques were most often reported, but oral and femoral contacts were also used.

In an analysis of 23 children who showed homosexual trends, Bender and Paster (1941) found that the children were physically and mentally normal. The common background of the children revealed an inadequate family life during their infantile period of growth, and this was primarily responsible for their later behavior. Many of the children came from foster homes and had been in institutions or had been neglected during the early years of life.

Much that is considered *masturbation* is not really so. It is a form of sex exploration and is carried out primarily to satisfy the child's curiosity about the genital organs and the sensations he receives when stroking, fondling, or playing with them. Technically the term "masturbation"—though it is widely used, even in scientific literature, to describe the behavior of young children in the stimulation of their genital organs—should be reserved for cases of genital stimulation which is followed by pleasurable feeling or orgasm. During the first six years, the child at some time or other, in the process of investigating his body, discovers by chance that touching the genitals gives more pleasurable sensations than touching any other part of his body. It is not surprising that the little child repeats the act, especially when he is alone and has little to engage his attention and interest. Dillon (1934), in a study of nursery-school children, found that masturbation served to release tension. Young children, he found, make no attempt to conceal play with their sex organs, nor do they show signs of guilt or shame when caught in the act.

The school child, who has learned from scoldings or punishment that playing with his sex organs is considered naughty, generally practices

masturbation when alone. If he has not discovered the pleasurable sensations that come from playing with the sex organs through his own exploration, he generally learns to do so by watching other children or from the suggestions of older children. Almost always, these practices are carried out in the absence of adults, when the child is in bed, so that it is impossible to know just how frequently they occur.

How widespread masturbation is among children is not actually known. Among the preadolescent boys questioned by Ramsey (1943*a*), masturbation appeared at some time in the sexual histories of nearly all of them. Three-fourths of the boys had their first experience between the ages of ten and sixteen years. Levy (1928) reported that direct stimulation of the genitals occurred in over half of the boys under three years of age whose mothers were interviewed by him, as contrasted with only four out of 26 girls. Koch (1935) likewise reports more masturbation among boys than among girls.

Kanner (1942) has pointed out that there are four types of masturbation, which he lists as follows:

1. *Automasturbation*, which is usually manual.
2. *Mutual masturbation*, which occurs between two or more children who stimulate each other.
3. *Instrumental masturbation*, carried out with the aid of various instruments, such as chair backs.
4. *Mental masturbation*, which is brought about through mental imagery.

In young children, masturbation can be prevented by eliminating the stimulation of the sex organs. This can be done by using loose, comfortable clothing, by avoiding urine acidity and constipation, by keeping the child so active that he will use up excess energy, and by proper explanation of why it should not be engaged in, as soon as the child is old enough to comprehend what is said to him. The less attention given, the better. If the child's interests are distracted from himself and his own body and diverted into other channels, masturbation generally ends.

Sex Education. The modern point of view is that a child should receive information about sex when he begins to show an interest in sex, and that enough information should be given to satisfy his curiosity. Gardner (1944) has given four principles which are applicable to all techniques of sex instruction:

1. Sex education should be carried out in the home by the parents because the child first directs his questions to his parents and has every reason to expect a sympathetic response and a truthful answer.
2. The parent should differentiate carefully between the functions of the genital, urinary, and gastrointestinal tracts, to avoid possible unfortunate associations between them.

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1. Sex education should be carried out in the home by the parents because the child first directs his questions to his parents and has every reason to expect a sympathetic response and a truthful answer.
2. The parent should differentiate carefully between the functions of the genital, urinary, and gastrointestinal tracts, to avoid possible unfortunate associations between them.

3. The child needs frequent repetition of truth about these matters, to synthesize his thinking and to correct any misinformation he may have.

4. Parents must be concerned with the ideas and assumptions which the child may have acquired and which may be inaccurate or disturbing. These should be corrected if they are wrong, and the child should be reassured if he is concerned.

Sex instruction, if it is to be complete and adequate to meet the needs of present-day life, should be of two types: *constructive* and *preventative*. *Constructive education* should build up healthy attitudes about sex and marriage, while *preventative education* should not terrify the child because of the morbid emphasis on the ill effects that come from sexual promiscuity but should teach the child what to avoid in his sexual relationships, just as he is taught what to avoid because of the possible danger to him in other aspects of his life. If the preventative teaching be of this type, it will tend to establish a healthy attitude of caution, which will have a pronounced effect on the behavior of the individual, especially during the adolescent years.

There is no one best time to give sex instruction. It varies from one child to another and should be determined by the child's curiosity. As a general principle, the time for giving sex instruction and the amount given should be determined by the child's questions rather than by any set rules. Whenever the child asks questions about sex, he should be given information in a correct, matter-of-fact way, just as he would be if his questions dealt with the weather or why we live in houses instead of huts.

In every circumstance, children should be given complete sex instruction before they enter the stress and strain period of puberty, as a safeguard against the emotional reactions that invariably accompany the physiological changes occurring at this time. This should not only include information about the changes that will take place in their bodies, but they should learn what the purposes of these changes are as a preparation for mature sex life. Above all, emphasis on the pathological aspects of sex should be avoided. Instruction about this aspect of sex should be deferred until late in adolescence and, if possible, should be given by doctors or teachers, to insure a correct scientific knowledge of the subject.

Terman (1938) reports that, among the 678 men questioned by him, the time that the information about the origin of babies was secured was as follows:

Age	Per Cent
Before six	8
Six to eleven	60
Twelve to sixteen	30
Over sixteen	2

Similar findings are reported by Ramsey (1943), who discovered that the boys he questioned had a considerable amount of information about sex before they reached the age of ten years. Approximately 90 per cent of the first information the boys received came either from male companions or from their own experience. Parents were rarely reported as the first source of information. When instruction is given in the home, it is more often given by the mother than by the father.

Of the 981 mothers who contributed information to Hattendorf (1932) concerning the sex questions of their children, 167 had given evasive or untruthful information to their children, while 204 frankly admitted that they had given no instruction at all. When sex instruction was initiated by the mothers, the topics discussed were as summarized in Table LXIV.

TABLE LXIV. SEX INSTRUCTION INITIATED BY MOTHERS

Type of Instruction	Number of Mothers Attempting Instruction
1. Reproduction	388
Mother's part	92
Father's part	97
Mother's part in animals	97
Father's part in animals	53
2. Sex differences	547
3. Puberty	0
Menstruation	107
Seminal emissions	11
4. Vocabulary—organs and functions	67

Source: HATTENDORF, K. W. A study of the questions of young children concerning sex: a phase of an experimental approach to parent education. *J. soc. Psychol.*, 1932, **3**, 61. Used by permission.

More emphasis, it may be seen from the above data, related to sex differences than to any other aspect of sex instruction. Reproduction came next, with relatively little attention being given to the roles played by the mother and the father in the reproductive process. Puberty changes and their significance were completely neglected.

Before boys reach the age of ten years, Ramsey (1943) discovered from discussing the matter with boys in personal interviews, they have a considerable amount of information about sex. Most of the information was derived from male companions, with approximately 90 per cent of the first information the boys received coming from male companions or from their own experience. Parents were rarely reported as the first source of information.

One obstacle to giving boys adequate sex instruction, Conn and Kanner (1947) stressed, is the limited knowledge most boys have of the standard terms used to refer to sex. Most boys, they found, use vernacular terms when they discuss sex matters and are, therefore,

unfamiliar with the technical terms and their meanings. Because of this fact, boys find it difficult to read even the simplest printed matter about sex.

If sex education is to fulfill its purpose adequately, it must not be limited to imparting factual information about sex. Of equal, if not of greater, importance is it that emphasis should be placed on the development of healthy attitudes about sex matters.

What factors influence a child's attitude about sex has been subjected to investigation by Conn (1939). According to him, the most important factors are these:

1. *Language.* A child becomes sensitized at an early age to certain words. He has been warned not to say them and has heard the embarrassed laughter or seen the looks of children and adults when these words were used. It is not the thing itself, Conn contended, but its symbol which appears dirty or sinful and gives rise to the feeling of shame. This is especially true when references are made to genital differences or to the genital organs.

2. *Age.* How much the child comprehends and remembers about "the facts of life" depends partly on how old he is and whether the information is suited to his age.

3. *Specific Sexual Experiences.* These occur in the form of opportunities to inspect and to be inspected by members of their own and of the opposite sex.

4. *Sensuous Experiences.* These arise from genital sensations, such as tickling, tingling, itching, and stinging.

THE HUMAN BODY

One of the earliest forms of exploratory behavior of young babies is watching and investigating their own bodies. When lying flat on his back, the baby will hold his hands before his eyes, wiggle his fingers, and watch what happens. Much of the pulling of his hair, nose, or ears; the poking of his fingers into the different orifices of the body, as the mouth, ears, nose, and navel; and the scratching of his skin and hair are exploratory in nature. Later, when he discovers a mirror and how it works, he spends much time observing himself in it.

An interesting study of the young child's curiosity about his own body and that of other children was made by Dillon (1934) through the observations of nursery-school children, both boys and girls. These children ranged in age from twenty-seven to sixty-two months. The observations were made during the dressing periods before and following the afternoon naps.

In the 3½- to five-year-olds, Dillon found there was a greater interest

in their own bodies than was shown by the younger children. This interest took the form of comments and questions about various parts of the body and of some tendencies toward exhibitionism. The children examined the navel, the eyes, hair, breasts, or anus. They stroked their skin, called the attention of the other children to their bodies, or observed themselves in the mirror. The behavior of the children during elimination, Dillon commented, was as matter of fact as brushing their hair.

Awareness of Sex Differences. When and under what circumstances children become aware of sex differences was investigated by Conn and Kanner (1947) in the case of 200 children, ranging in age from four to twelve years. The personal differences that impressed the children especially were those in attire, hair, genital configuration, and urination position. Out of the 200 children, 150 named differences in attire, 116 named genital differences, 93 named tonsorial differences, 44 named differences in urination posture, 9 made reference to the breasts and nipples. For the most part, the children compared boys with girls, making little reference to grown-ups. That explains the few references to breasts, pubic and axillary hair, vocal differences, and beards.

The youngest ages at which the children named the various differences were as follows:

Differences	Youngest Age at Which They Were Named, Years
Hair	4
Clothes	5
Eyes	5
Hands	5
Face	6 (almost 7)
Complexion	7
Legs and feet	8
Figure	8
Strength	8
Gait	9 (almost 10)

Few children under five and over eleven mentioned clothing differences, it was noted. The younger failed to notice these differences and the older children were more concerned with other differences.

Children under 3½ years of age generally do not differentiate between the sexes, Dillon (1934) found. Even differences in the appearance of the genitals does not carry a sex significance, but rather was accepted like individual differences in eye color or hair. Older children, from 3½ to five years of age, recognized anatomical differences between boys and girls, but only as incidental characteristics. Most emphasis was placed on differences in styles of clothing, manner of wearing the customs of the two sexes, and names. This may be seen in such

ments as "Merle's a name for a girl," "Boys wear ties and girls do not," and "Boys have short hair."

To discover how children react to the discovery of genital differences, Conn (1939, 1940, 1947) questioned children four to twelve years old by the play-interview technique. The reports given showed that a large percentage responded to the first sight of genital differences with tranquil, unperturbed acceptance. Even though they were not prepared, the unexpected did not upset them. Some referred to the genitals as "funny" (meaning "strange"), because they were surprised at not seeing the same genitals in the opposite sex as they themselves had. Only a small percentage of the children indicated that they felt that something was "wrong," that girls had once had the same genitals as boys, but they had been cut off or broken off. There were varying degrees of curiosity about the differences in the genitals, but the average child was not upset about the matter.

Modesty and Shame. At what age children begin to display signs of modesty and shame with regard to nakedness has never been determined. Such different ages for the appearance of these reactions were reported by children's parents to Conn and Kanner (1947) that they concluded that modesty is an inculcated attitude, brought about by percept and admonitions. It is not, they stressed, fundamentally related to sex. Dillon (1934) reported that among nursery-school children there was no sense of impropriety in appearing undressed. The children made no effort to conceal the manipulation of the genitals, nor was there any manifestation of a sense of shame.

IDEAL SELF

Because of his interest in himself as an individual, every child has an ideal that he would like to attain. This ideal self is generally a concept built up from his contacts with people and from his readings. For the most part, it is beyond the reach of the child, because it is too remote from his abilities to make its attainment possible.

Studies of the child's ideal self have revealed the sources from which the child derives his ideal and the influence it has on his behavior. Hill (1930) asked nearly 9,000 children, ranging in age from six to twenty years, the question, "Of all persons whom you have heard or read about or seen, whom would you most care to be like or to resemble? Why?" For all age groups, the largest number of ideals came from the child's immediate environment. Acquaintances served as ideals more often than did parents or teachers. Historic and public characters were the next most frequent sources of ideals. Very few children, either boys or girls, idealized foreigners. The historic and public characters that they ideal-

ized were Americans. Very few ideals (2.8 per cent) were taken from fiction and even fewer (1.9 per cent), from religion.

Very similar findings were reported by Stoughton and Ray (1946), who classified children's heroes and ideals as summarized in Table LXV.

TABLE LXV. HEROES AND IDEALS

Category	Percentage		
	Boys	Girls	Both
Persons or characters from immediate environment	33	68	51
1. Parents	7	11	9
2. Relatives	8	5	7
3. Friends	10	21	15
4. Teachers	3	24	14
5. Others	5	7	6
Characters from remote environment	65	30	47
1. Literature, fiction	8	8	8
2. History	14	10	12
3. News, contemporary affairs	22	2	12
4. Comics, movies, radio	21	10	15
Religious characters	2	2	2

SOURCE: STOUGHTON, M. L., and RAY, A. M. A study of children's heroes and ideals. *J. exp. Educ.*, 1946, **15**, abbreviated from p. 157. Used by permission.

As children grow older, it was found, from the second to the sixth grade, there is a diminishing interest in ideals from the immediate environment (72 per cent for grade 2 and 42 per cent for grade 6), and an increasing interest in ideals from remote sources (25 per cent at grade 2 and 57 per cent at grade 6). This shows how interests broaden with age.

An age sequence in the development of the ideal self, or the "ego-ideal," was noted by Havighurst *et al.* (1946) in their analysis of children's essays on the subject "The Person I Would Like to Be Like." In this sequence, the child from six to eight years of age chooses a parent or some other family member as an ideal. From eight to sixteen, a glamorous person or an attractive, visible adult is their choice; while in the mature stage, the ego-ideal is the composite of desirable characteristics drawn from all the persons with whom the individual has identified himself during childhood and adolescence.

Attainment of Ideal. How possible it will be for the child to attain his ideal is a question. According to Thorndike (1935), interests are a dependable clue to ability. If this were the case, it would mean that

the child would be capable of attaining the ideal he set for himself. This point of view, however, is not borne out by the findings of Hirsch (1939), who correlated tested abilities of children with their interests and with self-estimates of their ability. Hirsch found rather low correlations between ability and interest, $+.20 \pm .029$. The correlation between tested ability and self-estimated ability was higher, $+.39 \pm .027$; and that between self-estimated ability and interest was highest, $+.48 \pm .025$. Hirsch concluded his study with the statement, "a child's interests are, therefore, much more an index of his wishful estimate of his ability than of his real ability."

Permanence of Ideal. To see how permanent the child's ideals are, Jersild, Markey, and Jersild (1933) asked school children, "Would you

TABLE LXVI. HOW CHILDREN WOULD LIKE TO BE CHANGED

Change	Percentage
Do not want to be changed	29.2
Be bigger, stronger, smarter, prettier, etc	25.4
Change in moral character, better habits	7.6
Have magic powers, be an elf, etc	7.1
Engaged in a job or an activity	6.6
Into specific object or animal	4.0
Be of opposite sex	3.8
Be younger, keep youth	3.5
Change in name, nationality, type	3.3
Have wealth, better living conditions, etc	2.8
Be a mother, be married	1.3
Be like parent, relative	1.0
Be different, but way not specified	0.5
Have different father	0.3
Don't know, no response, unintelligible	3.8

Source: JERSILD, A. T., MARKEY, F. V., and JERSILD C. L. Children's fears, dreams, wishes, day-dreams, likes, dislikes, pleasant, and unpleasant memories. *Child Develpm. Monogr.*, 1933, no. 12. Adapted from p. 79. Used by permission.

rather be a boy or a girl (a girl or a boy)? Why?" Only one boy said "Yes," while 23 girls out of several thousand questioned said that they wanted to change. The reasons given related to the advantages and privileges of members of the opposite sex. When asked what they would want to be like if they could change, they gave the types of answers shown in Table LXVI.

It is interesting to note that the largest percentage of children said they wished to remain as they were. Those who wanted to change, wanted to change for the better, either physically or morally. Jersild *et al.*, in an analysis of age differences in desires, found that the eleven- to twelve-year-olds more frequently wanted to change than did the

younger children who were studied—the five- and six-year-olds. The same attitude was more true of girls than of boys.

VOCATIONAL INTERESTS

Studies of vocational interests of elementary-school children have shown that by the time the child reaches the third or fourth grade he has made a definite choice of vocation. This choice may be based on what he has heard about the vocation from conversations of adults or his contemporaries or on knowledge derived from movies, books, or magazines. Freeston (1939) found that relatives were less often the inspirers of the children's choice of occupations than their heroes and heroines. The boys were most affected by the world of sports and the girls by the movies.

In the group of elementary-school children studied by Jersild, Markey, and Jersild (1933), 47.1 per cent said that they wanted to go into the professions or executive business positions when they grew up. Of this group, 33.2 per cent chose nursing, aviation, clerical work, skilled labor, and petty trades; 6.8 per cent selected semiskilled and unskilled labor; while only 5 per cent said that they were undecided. The children with high intelligence-quotient scores chose mostly the higher occupations, while those with the lower intelligence-quotient scores more often chose the petty trades, skilled labor, and clerical work. Figure 80 shows graphically vocational choices.

In a study of children in grades 1 through 6, Boynton (1936) found that 35 per cent of the girls preferred teaching to any other occupation. Other preferences were getting married and keeping house, nursing, and working in a beauty parlor. These four occupations, combined, made up 75 per cent of all choices. Boys, Boynton found, had a wider range of occupational choices. Eleven different occupations were listed in 75 per cent of the choices. Boys were primarily interested in medicine, aviation, carpentry, and working on the railroad or as a chauffeur. As a group, they were not professionally inclined but showed more interest in the semiskilled occupations than did the girls.

Interest vs. Ability. Children, as a rule, do not take into consideration their abilities for a given occupation when they select it. The choice is, as a rule, based on factors other than ability or fitness for the occupation chosen. Nor do the young choosers take into consideration whether or not there will be enough demand for the type of work they wish to do to justify their electing it as a life career. On the whole, their choices of vocation are not based on practical considerations.

This is well illustrated by the fact that most girls would like to be actresses or models, regardless of their looks, their poise, or their ability

to appear to advantage in front of people. Being a doctor or a lawyer, an aviator or an officer in the army or the navy is the ambition of nearly every boy at some time or other. The tendency is to select a "glamour occupation," with little or no consideration for their fitness for such an occupation. This is well illustrated in a study by Gray (1944) of the vocational interests of Negro children. Among the girls, the favorite occupational choices were teaching, nursing, and beauty-parlor work,

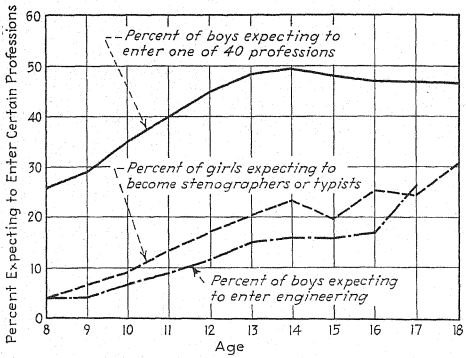

FIG. 80. Percentage of boys and girls expecting to enter certain occupations according to age. (*Based on data of H. C. Lehman and P. A. Witty, One more study of permanence of interests. J. educ. Psychol.*, 1931, 22. *From F. K. Shuttleworth, The adolescent period. Monogr. Soc. Res. Child Develpm.*, 1938, **3**, *No.* 3. *Used by permission.*)

while the boys showed a preference for being doctors, farmers, carpenters, or teachers. Gray pointed out that the choices were very far from the types of work in which the children were likely to find employment.

Changes in Vocational Interests. Fortunately, few boys and girls retain an interest in some line of work indefinitely. As they grow older, they develop new vocational interests with more and more trend toward an interest in the type of work they are capable of doing. As Lehman and Witty (1931) have pointed out, few phases of human nature are subject to such marked changes as are shown in the vocational interests and preferences of growing boys and girls. It was found that, with the onset of pubescence, there is a marked change taking place in their vocational attitudes. In Tables LXVII and LXVIII are shown the percentages of children at each age, together with the occupations they say they want to follow. These tables were constructed to show what will

be the probable number, in a group starting at the age of 10½ years, who will show the same interest as puberty progresses.

In a later study of the permanence of interest in vocations, Lehman and Witty (1931*a*) covered 200 occupations selected by several thousand

TABLE LXVII. VOCATIONS TOWARD WHICH BOYS MANIFEST A CHANGE IN ATTITUDE THAT PARALLELS RATHER CLOSELY THE ONSET OF PUBESCENCE

Vocation	Ages						
	11½	12½	13½	14½	15½	16½	17½
	Percentages						
Shipbuilder	100	75	55	40	38	32	25
Soldier	100	80	57	34	22	19	14
Sailor	100	85	71	50	36	30	20
Circus performer	100	75	50	25	14	12	12
Brakeman or conductor on a train	100	70	68	49	32	30	23
Switchman or yardman	100	68	57	35	27	16	10
Fireman (answering fire alarms)	100	74	46	33	26	14	9
Motorman	100	63	47	23	19	8	13
Cowboy	100	75	63	43	21	20	9
Sheepherder	100	65	52	29	13	9	6
Night watchman	100	58	37	20	13	16	9
Sheriff or policeman	100	70	47	32	17	13	10
Worker in railroad shops	100	75	59	37	40	28	25
Glass blower	100	68	36	37	16	11	14
Jeweler or watchmaker	100	82	70	47	27	21	23
Drayman, teamster, or truck driver	100	57	41	41	23	21	18
Messenger	100	66	50	34	21	11	
Cowboy*	100	66	41	21	10	6	
Cowboy†	100	68	23	13	11		
Cowboy‡	100	74	41	37	14		

* Activities which the boys say they *would like best* to follow.
† Activities which the boys say they most likely *will* follow.
‡ Activities which the boys believe are *most respected*.
Source: LEHMAN, H. C., and WITTY, P. A. A study of vocational attitudes in relation to pubescence. *Amer. J. Psychol.*, 1931, **43**, 97. Used by permission.

children ranging in age from 8½ years to 18½ years. They found that between 11½ and 18½ years, being an aviator was a boy's first choice; being a cowboy was a favorite choice between the ages of 8½ and 11½ years, with gain in popularity for a legal career occurring in the latter part of adolescence. In girls, the occupation of stenographer or typist proved to be the most popular at the 18½-year level. In general, this study showed that vocational interests are symptomatic of ability only to a limited degree.

TABLE LXVIII. VOCATIONS TOWARD WHICH GIRLS MANIFEST A CHANGE IN ATTITUDE THAT PARALLELS RATHER CLOSELY THE ONSET OF PUBESCENCE

Vocation	Ages							
	10½	11½	12½	13½	14½	15½	16½	17½
	Percentages							
Magician	100	72	45	32	26	7	8	1
Circus performer	100	80	56	47	32	18	11	6
Jeweler or watchmaker	100	72	44	34	24	17	20	19
Maid or servant	100	74	49	42	22	19	21	13
Movie actress or actor*	100	72	57	43	32	18	15	10
Movie actress or actor†	100	63	39	22	15	7	6	1
Teacher in grade or rural schools‡	100	77	53	37	26	17	11	6
Nurse§	100	72	61	48	31	15	13	8

* Activities which the girls state that they *would like best* to follow.
† Activities which the girls say they most likely *will* follow.
‡ Activities which the girls believe to be the *best money-makers.*
§ Activities which the girls believe are *most respected.*
Source: LEHMAN, H. C., and WITTY, P. A. A study of vocational attitudes in relation to pubescence. *Amer. J. Psychol.*, 1931, **43**, 97. Used by permission.

DEATH

Every child, at some time or other, becomes deeply interested in and concerned about death, funerals, and what happens to the individual after death. When this interest will appear and how strong it will be depends, to a large extent, upon environmental influences. When death comes close to a child, through the death of a pet animal, a member of the family, or a friend, the child's interest will be stronger than if the death is of a person whom the child knows only slightly.

As is true of the child's interest in religion, interest in death is of an objective, impersonal sort. The child regards it as something that happens to other people but he does not think of it in relation to himself. Furthermore, because of his limited ability to comprehend the meaning of things not immediately present, it is difficult, if not impossible, for him to grasp the meaning of the finality of death.

In order to discover just what death means to children, Schilder and Wechsler (1934) discussed the meaning of death with children of ages five to fifteen years and also showed them eight pictures of death. The child was asked to comment on these pictures. It was found that children are not primarily concerned with their own death, though they are ready to accept it as a possibility and to project it into a future so remote that it has little reality for them.

Children, these investigators discovered, think more of death through violence than of death through disease. Their concept of death consists primarily of the idea of deprivation—the dead can't move. Added to this are the disagreeable sensations they get by the sight, touch, and smell of dead animals or persons. Furthermore, death is not thought of as the natural end of life but as the result of the hostility of others or as a punishment for wrongdoing, with God generally thought of as the punishing agent.

In a recent study made at the University of Budapest, Nagy (1948) investigated children's theories of death. The children she studied ranged in age from three to ten years. Through an analysis of their drawings, written compositions, and personal discussions, Nagy was able to obtain information on which she based her conclusions that the child's ideas about death go through three phases of development, which she outlined as follows:

1. Between the ages of three and five years, the child denies death as a regular and final process. He attributes life and consciousness to the dead and believes that a dead person or animal is only asleep. Furthermore, he wants to know where and how the person continues to live after death. He is puzzled about how the person can move in a coffin. Between the ages of five and six years, he begins to think of death as a gradual or temporary thing, but he does not comprehend the meaning of its finality.
2. Between the ages of five and nine years, death is personified, being imagined to be either a separate person or one identified with the dead.
3. Only after the age of nine years does the child recognize death as the cessation of corporeal life and as inevitable.

DREAMS

To a child, as to an adult, dreams are a source of wonder and of interest. What causes them, whether or not they will come true, why they take the form they do, and numerous other questions relating to dreams stir up the child's curiosity. It is not at all unusual for children to discuss their dreams in great detail with their parents and friends and to compare their dreams with those of others.

Because of the practical difficulty of obtaining information about children's dreams, relatively little work has been done along these lines. What few investigations have been made have necessarily been based on information obtained from questioning children about their dreams. This offers children unlimited opportunities for filling in gaps in the recall of their dreams and for "embroidering" them so that they will be more attention-getting than the dreams related by their friends.

Many years ago, Freud (1920) pointed out that children's dreams, like those of adults, are the fulfillment of wishes that have not been fulfilled

in daily life. He went further and explained that children dream less than do adults, because they have fewer unfulfilled wishes than adults have. In the latter part of the nineteenth century and the early part of the twentieth, when Freud was writing his now famous dream theory, the prevailing customs in child rearing, especially in European countries in which the German influence was strong, emphasized the teachings that "children should be seen and not heard" and that children could be molded into a socially acceptable model, provided that strict disciplinary techniques were employed.

Unquestionably, most of the children whom Freud studied had been brought up in homes where the German-influenced theories of child rearing prevailed. Under such conditions, most of his subjects had thwarted wishes which should have been expressing themselves in almost constant dreaming. But, since this was not the case, American and English psychologists began to look for other explanations of children's dreams and to study their content.

Today it is widely recognized that children dream less than adults do, not because of fewer thwarted wishes, as Freud emphasized, but because of the nature of their sleep. Dreams occur, it has been pretty definitely proved in the case of adults as well as of children, not during deep sleep but in the drowsy, half-asleep, half-awake state that occurs as the individual falls asleep and as he wakens. The child's method of going to sleep and of wakening is such that drowsy states are extremely short, if they exist at all. The child goes from a wide-awake state to that of deep sleep, or from deep sleep to being wide-awake, almost instantly. Only when some physical or emotional condition interferes with the child's ability to sleep in the normal manner are dreams likely to occur. This type of sleep rhythm persists throughout childhood and changes with the puberty development.

Content of Dreams. What children dream about has been the subject of several investigations. As Jersild (1947) has pointed out, the material of children's dreams is drawn from their actual experiences. But it is often more difficult to trace them to their sources than is true of waking fancies. There is no indication that the content of dreams is made up of the thwarted wishes of the child's daily life, as Freud pointed out. Rather, there is evidence to show that the subject matter comes from experiences of recent origin in the child's life, frequently from those of the preceding day.

Jersild, Markey, and Jersild's (1933) study of dreams of five- to twelve-year-olds revealed that dreams at this age cover a wide range of topics—from possession of toys, food, and money to occasions of accident, fire, and catastrophe. No single group of topics seemed to predominate.

The most frequent, however, were related to finding, having, ing physical objects, such as clothes, money, food, and weal play, amusements, adventure, and fun; while there were also fear dre involving apparitions and dead people. At every age, unpleasant dreams were more common than pleasant ones.

An analysis of the unpleasant dreams of children was made by Foster and Anderson (1936), who obtained data from parents concerning the dreams of their children. The subject matter of unpleasant dreams of one- to four-year-olds most often related to animals; in five- to eight-year-olds, to strange or bad people and to impersonal types of danger, as war, fire, and electricity. In the nine- to twelve-year group, the unpleasant dreams were about difficulties surrounding themselves, their friends, or their pets.

Many dreams of children relate to family experiences, Simpson (1935) found. Of the 239 boys' dreams studied, 69 were about parents; while 103 of the 269 girls' dreams had relation to their parents. The dream parents were found to act as parents do in real life—giving, playing with the child, kissing, punishing, and rewarding, just as real parents do. Both boys and girls, Simpson noted, dream more about their mothers than about their fathers.

Conditions Predisposing to Dreams. The physical and the emotional conditions of the child, as well as the sleeping environment, are factors of importance in determining how much the child will dream. The experiences of the preceding day, especially those which occurred just before bedtime, are responsible to a large extent for the content of the child's dream.

Simpson (1935) found that girls dream more than boys do. In an analysis of the conditions that predispose the child to unpleasant dreams, Foster and Anderson (1936) reported that unpleasant dreams decrease with age. When children sleep in a bed alone, they have fewer dreams than when they share a bed with another child or with an adult. This was true of the bedroom, as well. The better the health of the child, the fewer dreams he has. And, finally, states of overexcitement from emotionally toned experiences of the preceding day, such as fears, worries, anger, or quarreling, all prepare the child for dreaming.

11. Clothing

Children's Attitudes toward Clothing. Very early in life, the child discovers that his clothes attract attention to himself. Comments are made by adults about the newness, the color, or the style of the clothing. Playmates of his own age notice and admire his new clothes and openly envy an article of clothing which they themselves do not possess.

in daily life, that three-year-olds not only noticed one than do ferred to the newness, color, or any feature that have or possess thing of other children. It is not, therefore, sur- child learns the powerful effect that clothing has on fication that it gives to the wearer. As a result, his is greatly enhanced.

FIG. 81. Every child is interested in clothes. (*Courtesy of Mary Brandel Hopkins.*)

Scientific studies of the child's interest in clothing by Flaccus (1906), Hurlock (1929, 1929*a*), Macaulay (1929), and Sanborn (1927) have shown just what clothing really means to a child. New clothes, which many adults dread, have a peculiar charm for the child, who wishes to wear a new garment as soon as it is bought, whether or not it is appropriate for the occasion. The child is ridiculously proud of a new garment and calls attention to it with such remarks as: "See my new shoes!" The garment that is noticed and admired by others becomes especially dear to the child, but it loses its charm if it is ignored. The first clothes of a particular kind, especially if they are like the clothes of older children, are worn with tremendous pride. The first pocket, the first long trousers, the first kid gloves, or the first long stockings are the source of much pleasure.

Slavish conventionality in regard to clothing comes when children reach the self-conscious age, beginning around the eighth or tenth year. At this time, boys and girls want to be noticed as little as possible, and if they are like others in appearance, there is less chance for them to be singled out and made conspicuous. If the child is forced to wear clothes different from those of his friends, he feels ashamed and is afraid to go out, for fear of being laughed at. This attitude becomes increasingly pronounced with each successive year until the end of early adolescence, at approximately the sixteenth year. After that, with regaining of self-confidence and a definite desire to be noticed, the adolescent swings to the opposite extreme in his attitude toward his clothing.

Macaulay's Study. In order to discover what is the child's attitude toward clothing, Macaulay (1929) asked boys and girls, six to fifteen years old, from moderately prosperous homes in Exeter, England, to write short essays in answer to the following questions:

1. What sort of clothes do you like best to wear to a party? Say why you like them.
2. What sort of clothes do you like best to wear for everyday? Say why you like them.
3. Are there any clothes that you dislike, and would do without if you could? Say why you dislike them.

Their answers revealed that, up to the age of nine years, children regard clothing simply as a form of decoration, and the design of the clothing is unimportant. There is a strong interest in color, but the child's attitude toward color changes with age. Girls seven to nine years old choose a single bright color, such as blue, pink, red, or yellow. Even boys at this age like colors. As children grow older, there is a decrease in their desire for brilliantly colored garments and an appreciation for a greater range of colors. In the case of girls from twelve years of age on, Macaulay reported that many mentioned that the colors of the garments must be "pale" or "light," and some of the girls even selected gray, brown, or black for the first time. At this age, they want combinations of colors or patterned materials for their clothes.

Up to the age of nine years, color proved to be the only important factor in the child's choice of garments. After that age, children regard the design of the garment as an important consideration in their choice. They show definite preferences for certain types of clothing, whether or not the design is suitable to their ages or personalities. Little attention is given to the edicts of fashion, while major emphasis is placed on the decoration of the garment. From the age of twelve years, children consider both fashion and the suitability of the clothing as important. Boys, at that age, become more conventional in their attitudes toward their clothes than they formerly were. Throughout childhood, clothing is regarded as an impediment. Children want freedom of movement, and they dislike any clothing that hampers them. They show a dislike for tight, rough, or heavy clothing, and they prefer dark colors in their clothes, so that the dirt will not show.

Focal Points of Interest. In an analysis of children's clothing "wants," Hurlock (1943) has found that what children want in clothes is far more universal than the clothing wants of adults. These wants are a good indication of what interests a child in his clothes and where the real center of attention in this interest lies. The clothing wants of the child Hurlock has listed as follows:

1. The child wants his clothes to conform to the style of the group. Any deviation that is great enough to be noticed or ridiculed by other children is the source of much distress to the child and may readily lead to feelings of inferiority which will cause the child to withdraw from the group.

2. The child wants his clothes to be admired and envied by others. This gives him a feeling of importance, especially when other children copy the model he has set.

3. The child wants his clothing to be easy to manipulate. He becomes impatient if dressing is too long and laborious a task and he is embarrassed if he must ask for help in putting on or taking off a garment.

4. The child wants his clothes to be comfortable. Many adults will sacrifice comfort to style, but this is not true of children. They are interested only in clothes that offer them the freedom they need for the strenuous lives they lead.

5. The child wants clothes that are durable. Healthy, active boys and girls are not interested in clothes which cannot stand the wear and tear of active lives. A dainty, fragile garment is all right for an adolescent or an adult, but the typical American child of today is not interested in it if it means sacrificing fun when he wears it.

Child vs. Adult Interests. Children's interests in clothing are so different from those of adults or even of adolescents that it is important to recognize these differences. The child's attitude toward clothing differs from that of the adult in four important ways:

1. The child is not interested in the style in vogue at the moment unless this style has been adopted by his group. The adult, by contrast, is not only keenly interested in the prevailing styles but he will frequently adopt them, regardless of whether or not they are becoming to him.

2. The child is not interested in the appropriateness of different garments for different occasions. He wants to wear his favorite clothes for any occasion, regardless of whether or not they are suitable. To an adult, appropriateness is an essential part of good grooming. He not only is aware of the importance of appropriateness, but he is willing to sacrifice personal choices for the sake of being appropriately dressed.

3. The child likes brighter colors and a larger variety of them in his clothes than does the adolescent or the adult. He wants to wear his favorite colors, regardless of their becomingness or appropriateness. Left to his own devices, he would combine in his clothes two or more of his favorite colors, without caring whether they harmonize.

4. The child has little interest in grooming. So long as his clothes are on, it does not concern him too much whether they are neat or not. Furthermore, he has little interest in keeping his clothes in good condition. Dirty or torn clothes are quite all right, as far as he is concerned. This contrasts markedly with the attitude of adolescent boys and girls. To them, grooming is of paramount importance. They are seriously concerned about the condition of their clothing and spend a great deal of time keeping their clothes fresh and neat.

Influence of Clothing. The child's clothes are not only a source of much pleasure to him, but they add tremendously to his attitude of self-confidence. A well-dressed child is more self-confident, better mannered, and less rowdy than a poorly dressed one. This is increasingly true as the child grows older. The adolescent and the adult find, as does the

child, that clothing has a marked effect on their behavior and that it has a definite influence on their outlook on life.

The effects of clothing on the child's behavior Young (1938) has listed as follows:

1. Comfort and satisfaction.
2. Self-confidence and initiative.
3. Happiness.
4. Freedom from ridicule.

The attitude of the social group must also be taken into consideration in evaluating the influence of clothing on the child's behavior and attitudes. What the group thinks is quickly sensed by the child and is then reflected in his attitude toward self. There is no question about the fact that the social group as a whole judges the individual in relation to his clothing and that it regards the latter as an outward insigne of the inward man. It applauds those whose clothing wins the approval of the group and condemns those whose clothing does not conform to social standards.

CHAPTER XIV

FAMILY RELATIONSHIPS

The child's attitudes and behavior are markedly influenced by the family into which he is born and in which he grows up. Because the home is the child's first environment, it sets the pattern for his attitudes toward people, things, and life in general. This fundamental pattern is never completely eradicated, even though it may be modified and changed as time goes on and the child's environment broadens to include the neighborhood, the community, and finally the world as a whole.

For many years, psychoanalysts have stressed the importance of early family experiences on the child's behavior and attitudes. According to Freud (1920), neuropathic parents who overprotect the child and smother him in affection awaken in him a "disposition for neurotic diseases." Flügel (1929) points out that too severe or too careful parents make the child rebellious, not only toward his parents but toward all adult authority. The emphasis on "momism" (Strecker, 1946) since the Second World War has stressed the psychological damage caused by maternal dominance and maternal overprotection.

The importance of family relationships in determining the child's attitudes and in setting the pattern for his behavior is seen especially clearly in cases of problem children, most of whom are the result of "problem parents." As Teagarden (1948) has pointed out, "all manner of behavior deviations can be, and often are, accounted for by the subtleties of home relationships."

In a study of the maternal attitudes of children with behavior problems, Field (1940) found definite indication that the childhood of the mothers had been unhappy and unsatisfying. As a result, the mothers' personalities showed a large preponderance of neurotic and infantile states. The mothers were poorly adjusted to marriage, owing to the fact that they and their husbands were usually immature and inadequate individuals. This was reflected in the behavior of their children.

Studies of juvenile delinquents (see pages 468–470) almost unanimously agree on the importance of the home in determining whether or not the child will be a juvenile delinquent. Not the economic advantages or disadvantages of the home but the relationships of the child with the other members of the family are the important factors that will deter-

mine the quality of the child's behavior. Many behavior problems—such as negativism, temper tantrums, overdependency, and attention-demanding—which occur in childhood among children whose parental relations are strained and inharmonious, develop into serious forms of problem behavior as the years go on, unless home situations improve. It is from such cases that the majority of the juvenile delinquents develop.

FIG. 82. Many eating problems develop from unfavorable family relationships. (*Courtesy of Charles Phelps Cushing.*)

The effect of family relationships on problem behavior is well illustrated in a study of eating problems of children made by Lurie (1941), which revealed that eating problems were characteristically found in children whose family situation involved domestic discord and frequently broken homes. The mother was essentially an immature person and the father played an ineffectual and undependable role in the family. The mother's attitude toward the father was unfavorable, and the child was unwanted and unplanned for in almost every case.

Individual Differences. How the child will react to different influences in the home and his relationships to the various members of the family will depend to a large extent upon what type of individual he is. The quiet child will be affected differently from the aggressive child by different home situations, just as the introvert will react differently from

the way that the extrovert would react. Because the child's reactions to family relationships depend so much on his individual make-up, it is possible in only a general way to show how different situations in the home influence the attitudes and behavior of children. Individual variations must be taken into consideration for each case.

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FACTORS INFLUENCING CHILD BEHAVIOR

In recent years, much attention has been given to an attempt to evaluate the different factors in the home which influence the child's attitudes and behavior. Numerous studies along these lines have been made and the results have pointed to the fact that the influence exerted by home situations and family relationships is far greater than was originally believed. While no attempt will be made to place the different factors in order of importance, as complete a survey as possible will be made of the different experimental investigations and their findings.

1. Order of Birth

Contrary to popular opinion, there is no "ideal position" within a family. As Goodenough and Leahy (1927) have pointed out, there probably is "no position in the family circle which does not involve, as a consequence of its own peculiar nature, certain special problems of adjustment." Adler (1930*a*) likewise has laid emphasis on the importance of sibling rank and has stressed the fact that each child faces a difficult situation because of his position in the sibling constellation and because of his or her sex.

In spite of the many experiments that have been made to determine the relative merits of different family positions, the results are often conflicting, leaving one with the distinct impression that there is no one position within the family that is more favorable than the others. To a certain extent, the advantages or disadvantages of different positions depend upon the child himself as much as upon the position that he holds within the family.

Long-range Effects. To determine what long-range effect order of birth will have, a number of studies have been made on adolescent boys and girls. In a study of college students, Campbell (1933) found that boys who were raised as only children scored higher on tests for neuroticism, self-sufficiency, and dominance than did boys raised as intermediate children. Girls who were only children rated higher on neuroticism and introversion and lower on tests of dominance and self-sufficiency than did girls with siblings. Both boys and girls made significantly more variable scores than siblings did.

Stagner and Katzoff (1936) found no significant difference in the char-

acteristic of dominance among college students for the order of birth, while Guilford and Worcester (1930) reported more initiative and dominance among only children than among those who had siblings.

Thurstone and Jenkins (1931) report that "neuropathic tendencies are usually frequent among only children," and that a disproportionately large number of first-borns are found among the problem children. Among nursery-school children, Kawin (1934) found a larger proportion of the oldest children among the socially maladjusted and a larger proportion of youngest children among the well-adjusted group than there are in the other groups.

Order of Birth and Behavior. How birth order influences the individual's behavior was the subject of an investigation by Wile and Noetzel

TABLE LXIX. LEAST AND MOST FREQUENT BEHAVIOR IN ORDINAL POSITION GROUPS

Only child.	Least frequent: unmanageable, disobedient.
	Most frequent: restlessness, food fads, vomiting, maternal overprotection.
Older child.	Least frequent: speech defects, school problem.
	Most frequent: quarrels with others.
Middle child.	Least frequent: food fads, school problems, vomiting.
	Most frequent: intellectual retardation, quarrels with others.
Younger child.	Least frequent: vomiting, quarrels with others, mother feeds and dresses.
	Most frequent: speech defects, fears.
Youngest child.	Least frequent; fears, quarrels with siblings.
	Most frequent: disobedient, converted sinistral, school problem, mother feeds and dresses.

SOURCE: WILE, I. S., and JONES, A. B. Ordinal position and the behavior disorders of young children. *J. Genet. Psychol.*, 1937, **51**, 76–77. Used by permission.

(1931). Their study suggested that the position of the child in the family was not an especially significant factor in fixing a personality type, in establishing definite forms of difficulty in adjustment, or in determining dominant attitudes and responses in human relations.

To determine whether there is any positive and significant correlation between the order of birth of children and their "problems" or behavior disorders, Wile and Jones (1937) studied 125 histories of children under eight years of age. These were divided into five groups—only children, older children from two-child families, middle children from families of three or more children, younger children from two-child families, and the youngest from families of three or more children. The behavior they found to be most frequent and least frequent for each of the five groups may be seen in Table LXIX.

Wile and Jones maintained that there is considerable evidence that some forms of behavior are related to maturational levels rather than to

ordinal position. Because fewer than 48 per cent of the children holding similar positions in like families exhibit the same behavior disorders, these investigators feel that order of birth in a family does not determine behavior characteristics.

In persistence, as measured by the Morgan and Hull Persistence Maze, Roberts (1938) found the following order for the average ratings for the groups of children of different birth orders:

Most persistent—youngest
Next persistent—middle
Next persistent—only
Least persistent—oldest

Oldest Child. The law of primogeniture, favoring the first-born in accession to title, property, and wealth, is based on the supposed superiority of the first-born. Many studies have been made to discover the relative effect of order of birth, or position in the family, on the intelligence of the offspring. Stated in another way, the question is, "Will the first-born have greater chances of being the brightest than will the second, third, or later-born children?"

Some scientific studies show a definite tendency for the intelligence quotient to increase progressively from the first-born to the later born, at least as far as the eighth-born child. Willis (1924) compared 219 pairs of first- and second-born children and noted a median intelligence quotient of the elder siblings to be 93.05 as compared with 99.14 of the younger siblings. In a study of 5,928 pairs of siblings, Steckel (1931) reported an increase in intelligence quotient scores with increase in order of birth as far as the eighth born. Jones and Hsiao (1928), on the other hand, failed to discover any significant difference in intelligence quotient scores between older and younger siblings in a group of isolated New England communities. Roberts (1938), however, found the middle- and last-born children to be consistently superior in intelligence to the first-born.

Hsiao (1931) in a study of 2,127 cases, concluded that "the first-born are at least not inferior to the subsequent children." Arthur (1926) found that among kindergarten children the younger siblings had higher I.Q.s than the first-born. In families of three children, the brightest were the youngest and the dullest were the oldest. Thurstone and Jenkins (1931) maintain that, since all comparisons involving large samples consistently favor the last-born, there seems to be justification for the conclusion that intelligence increases, on the average, with order of birth in the same family.

Genius, on the contrary, occurs more frequently among first-born than

among later-born siblings. Cattell (1921) found a disproportionate frequency of the first-born among the American men of science. Ogburn (1927) reports that in *Who's who*, the eldest child is most frequently represented, the youngest next most frequently, and the middle children least frequently. Likewise, Terman (1925), in his study of child genius, found a disproportionate frequency of geniuses among the first-born.

Studies of personality and social adjustment have revealed that the oldest child is in a position which makes successful adjustment very difficult, perhaps more difficult than for children in any other ordinal position. Adler (1930*a*) reported that oldest children, especially boys, are apt to be more conservative and less dominant than their younger siblings. Maddy (1943) reported contrary findings for sixth-grade children of different socioeconomic groups. Among them the oldest rated highest in dominance and the "only" children rated lowest in this trait.

According to Goodenough and Leahy (1927), the oldest child in a family shows a significant tendency toward lack of aggressiveness. In at least one out of every five cases they studied, this lack of aggression was manifested to a rather extreme degree. The oldest children were also rated low in self-confidence, lacked leadership qualities, were easily influenced by suggestion, and were very gullible. They are somewhat likely to be seclusive and of the introvert type. Stratton's (1927) study of anger indicated that first-born children are more prone to anger than others.

Cobb (1943) found that the oldest children she studied suffered more frequently from parental ego-idealism than did their siblings. The reason for this, she explained, is that parents tend to expect too much from the oldest child, with the result that he is more apt to suffer from a sense of failure. As each sibling arrives, oldest children feel less secure in the love of their parents. The characteristics Cobb reported as common among oldest children were that they were introverted, passive, abrasive; had more worries; were more anxious to escape blame; and had less persistence, stability, and counteraction in the face of difficulty.

Goodenough and Leahy (1927) offered the following as suggestions for the cause of relatively undesirable behavior among oldest children: the comparative inexperience of the parents in the case of the first-born; possible overstrain of the child from many small tasks, including the care of younger children; difficult adjustment which is involved when the situation in the family changes from "only child" to "not-only child."

Middle Child. The middle child in a family of three or more children is apt to be somewhat neglected in favor of the first-born or the baby of the family. According to Goodenough and Leahy (1927), the middle child, like the oldest, shows some tendency toward lack of aggression,

but this is far less marked than in the case of the oldest child. The middle child is rather easily influenced by suggestion, shows more than the usual craving for physical demonstrations of affection, and generally is gregarious in his social attitudes. Goodenough and Leahy found more instances of extreme unpopularity in this group than in any other. The middle child is frequently flighty and his attention is easily distracted from the thing at hand.

Youngest Child. The youngest child of a family frequently remains a baby too long. He is likely to be pampered and spoiled by the other members of the family, who continue to do things for him long after he is capable of doing them for himself. Sometimes, because he seems so much younger and less mature than the other children, there is a tendency for the family to leave the youngest child out of things and to treat him as if he did not actually fit into the family pattern of living. These two extremes of behavior—indulgence and disregard—are bound to influence the youngest child's outlook on life and, in turn, his behavior.

It is not at all unusual for older siblings to assume the role generally held by parents in the discipline of the youngest child. Older brothers and sisters "boss" him and punish him when his behavior does not come up to the standards they set. As a result of this sort of treatment by siblings, the "baby" of the family frequently becomes defiant, resentful, and irritable. He develops, as a result of the treatment he receives at home, a "chip-on-the-shoulder" attitude, which affects his relationships not only in the home but also with individuals outside the home.

According to Adler (1930*a*), the youngest children in families "bear unmistakable signs of the fact that they have been the youngest." He believes that they have the grestest incentive to strive to surpass other siblings. Goodenough and Leahy (1927) believe that the youngest child shows no really outstanding characteristics, with no marked tendencies toward either extreme. Cobb (1943) noted that the youngest child has an advantage over other siblings because his self-confidence has never been jolted by competition with a newly arrived sibling. In a comparison of delinquent and nondelinquent girls, Parsley (1933) found more delinquents than nondelinquents among the youngest.

guilty, wrong door

2. Onliness

According to tradition, only children fall into two types, (*a*) the spoiled, egocentric, antisocial and, therefore, very unpopular children; and (*b*) the withdrawn, sensitive, nervous children, who shrink from social contacts and are overdependent on their parents. Neither type, it is obvious, is looked upon as well-adjusted or is likely to make a success in life.

Early studies of only children emphasized the inferiority of the only child as compared with children in families where there are siblings. This inferiority was not regarded as limited to one aspect of development but was believed to permeate all phases of the child's development. This early attitude is illustrated in the statement by G. S. Hall (1907), who claimed that "Being an only child is a disease in itself." According to Blanton and Blanton (1927), "The 'only' child is greatly handicapped. He cannot be expected to go through life with the same capacity for adjustment that the child reared in the family with other children has" (p. 175).

More recently, opinions about only children, based on the results of studies of large groups of only children, have changed markedly. Stott (1940) maintains that you can study a child only in relation to the home setting, because that determines whether or not being an only child will be a handicap. Campbell (1934) concluded a study of only children with the statement that "'onliness' *per se* is not the environmental specter so widely assumed. Whatever role the mere presence or absence of siblings may play in the development of personality, its importance is certainly not crucial."

Social Adaptability. An opportunity to learn to get along with others and to adapt oneself to the social group is one of the advantages most often stressed for children with siblings. The only child, because he lacks this opportunity, is pitied. It is assumed that he will develop into a spoiled brat, who will be unpopular with his peers and frowned upon by adults. Levy (1931) maintains that the only child does not appear to be a spoiled child as frequently as do children from two-child families.

Fenton (1928) had only and non-only children rated by teachers. He found considerable overlapping of the two groups, even in traits such as sociability and generosity, in which the only child is supposed to be especially inferior. The greatest difference between the two groups was in self-confidence but, even there, the overlapping was large. Only children were slightly more self-confident than non-only children. Fenton did, however, find more nervous traits among the only than among the non-only children.

According to Goodenough and Leahy (1927), only children are more aggressive and more self-confident than are any children with siblings. They show extreme fondness for physical demonstrations of affection and are highly gregarious in their social interests. They frequently show some instability of mood and are easily excited, and their attention tends to be flighty and distractible.

Stott (1940), in his study of farm children, noted that only children

were not significantly different from other farm children who had brothers and sisters. Only children from city homes studied by him, however, scored significantly higher on the average than did the non-only children in personal adjustment, independence, and personal responsibility.

When an only child does not attend a nursery school, Taylor (1945) found, he is confronted at school age with an adjustment problem to a secondary group whose behavior is already unlike his. Then, either social maladjustment occurs or one can expect the development of personality disorders. When only and intermediate children were compared, Witty (1937) reported that in social adjustment the only children were only slightly superior to the intermediate. A slight difference in recreational interests was noted. Only children reported more dominating leisure interests and they devoted more time to reading than did the intermediates. Only children also participated more in group activities and showed more interest in music and drawing.

Scholastic Standing. How only children stand in their schoolwork as compared with children who have brothers or sisters has been the subject of several investigations. Levy (1931) reported that only children are troubled much more by scholastic difficulties than are children who have brothers and sisters. Hooker (1931), on the contrary, found that only children are not retarded in school nor do they differ scholastically from children who have siblings.

In a comparison of only with non-only children in junior high school, Guilford and Worcester (1930) reported that the only child received better marks in school subjects and had a higher I.Q. than did non-only children. His health attitudes and habits were better, and he was superior also in personal orderliness and cleanliness. Only in voluntary participation in extracurricular activities was the only child found to be equal or very slightly inferior to the non-only child.

Problem Behavior. Because of the widespread belief that only children are pampered and spoiled, it has been generally accepted that there are more instances of problem behavior among only than among non-only children. Blatz and Bott (1927), in their study of misdemeanors, found that only children had the best records and that fewer misdemeanors were characteristic of their behavior than occurred among the children having brothers and sisters. Hooker (1931) reported from her study of only children that they are not necessarily nervous, hysterical, and spoiled.

Ward (1930) compared the problems of 100 only children with those of 100 children in a family of three, and found the results as presented in Table LXX.

As may be seen from the data presented there, all problems except

fighting and seclusiveness are much more frequent among only children than among children who have siblings. To determine what cause or causes are back of the problem behavior of only children, Ward then analyzed the factors in the environment of the children that might have

TABLE LXX. COMPARISON OF PROBLEMS OF 100 ONLY CHILDREN WITH THOSE OF 100 CHILDREN IN A FAMILY OF THREE

Problems	Only children	Three-child families
Food fads	19	13
Nail biting	19	4
Restlessness and overactivity	28	8
Poor schoolwork	34	21
Unpopularity	20	8
Seclusiveness	6	5
Crying	12	5
Fighting	4	8

Source: WARD, A. The only child. *Smith Coll. Stud. soc. Work*, 1930, **1**, 54. Used by permission.

had an adverse influence. In Table LXXI are shown the 10 that seemed to be the most important.

Aside from the fact that lack of social contacts, which is more characteristic of only than of non-only children, has resulted in the development

TABLE LXXI. ADVERSE FACTORS IN HOME BACKGROUND OF 100 ONLY CHILDREN

Adverse Factors	Number of Children
Lack of social contacts	48
Other adults in home	40
Incompatible parents	39
Overprotective parents	31
Severe or prolonged illness of child	30
Mother working	23
Overambitious parents	18
Rejecting parents	18
Economic insufficiency	9
Poor neighborhood	9

Source: WARD, A. The only child. *Smith Coll. Stud. soc. Work*, 1930, **1**, 58. Used by permission.

of problem behavior, all the other causes listed above could readily be found in any home, regardless of the number of children. The causes are thus not characteristic of only children.

3. SIBLING RELATIONSHIPS

The relationship of a child to his siblings will be affected by m[illegible] different factors, the most important of which are the age differenc[illegible]

the siblings, the sex of the siblings, and the relationship that exists between the different siblings in the family and their parents. Boys, for example, react differently to brothers than they do to sisters. An older sibling is more likely to take a protective attitude toward a sibling whose age is considerably below his than toward one whose age differs from his by only a year or two. Likewise, favoritism of the parents toward one child in the family is bound to affect the reactions of the other children in the family toward that child.

FIG. 83. An older child's reactions to a younger sibling are generally favorable. (*Courtesy of Charles Phelps Cushing.*)

What attitude siblings have toward one another has been investigated by Smalley (1930). The results are presented in Table LXXII.

This table shows that there is a larger proportion of jealousy in the girl-girl combination (60 per cent) than in the boy-boy (44 per cent) or the boy-girl (30 per cent) combinations. The order was reversed for the protective attitude. More boy-girl combinations were friendly than were boy-boy or girl-girl combinations. The effect of age differences on jealousy was not great, Smalley found, but an increase in the friendly attitude was noted as the age difference increased. The friendly attitude was found almost exclusively in those whose age difference was more than 2 years.

Among young children, according to Gottemoller (1943), it is common for the child to express a wish for a sibling. This is not limited to only children, as many people believe. Furthermore, many children create imaginary companions to compensate for the lack of real siblings in their homes (see pages 320–321).

Social Interactions of Siblings. What common forms of social behavior are found in siblings has been studied through observations of brothers and sisters in home, school, and playground situations. McFarland (1938) observed 22 pairs of sisters at home and at times when contact between them was possible. The older sisters ranged in

TABLE LXXII. ATTITUDES OF CHILDREN TOWARD EACH OTHER, IN PER CENTS

Attitude	Combinations by sex		
	Boy-boy	Boy-girl	Girl-girl
Jealous	44	30	60
Protective	33	38	20
Friendly	23	32	20
Total	100	100	100

Source: SMALLEY, R. E. The influence of differences in age, sex, and intelligence in determining the attitudes of siblings toward each other. *Smith Coll. Stud. soc. Work*, 1930, **1**, 27. Used by permission.

age from three years, five months to six years, nine months, and the younger, from one year, four months to four years, eleven months. The different social interactions observed included the following:

a. Conflicts. These varied in time from 4 to 22 per cent of the social interaction time, with an average of 11 per cent. There was no consistent tendency for older or younger sisters to be more frequently the initiators or the winners in these conflicts.

b. Rivalry. Thirty-one per cent of the rivalry responses were over material objects and 31 per cent were social rivalry in which one child tried to surpass the other in the attention or regard of another person. Material rivalry was more often initiated by the younger sister and social rivalry by the older.

c. Directions. The mean number of directions given by the older sister to the younger was 112, and by the younger to the older, 66. There was a consistent tendency for older sisters to direct the younger more than for the younger to direct the older. Resistance to direction was shown more by the older than by the younger sisters.

d. Sympathy. Sympathy to a child in distress was shown more often by older (19) than by younger (7) sisters.

e. Protection. Protective reactions appeared more frequently among older (77) than among younger (10) sisters, and were more often directed toward sisters than toward other children.

f. Helping. Helping others occurred more often among the older (154) than among the younger (55) sisters.

g. Giving and Lending. These were more characteristic of the older sisters.

h. Affectionate Responses. Affectionate responses were nearly three times as frequent among the older as among the younger sisters. All the affectionate responses of the younger sisters were of a physical nature, while about 50 per cent of those of the older sisters were physical and the rest were verbalizations.

In summarizing the observations of sister behavior, McFarland stressed the fact that, while many types of response were shown, conflicts and rivalry proved to be the most common. Most important of all was the finding that there are distinct patterns of behavior for younger and older sisters. Older sisters play a more aggressive role in sibling relationships than do younger sisters. Whether this aggressiveness will carry over to other social relationships outside the home has not been determined. Studies of older children (see pages 518–519) have all stressed the fact that, characteristically, older children are less aggressive than are their younger siblings in social relationships with other children outside the home.

To determine just what form sibling rivalry will take, Levy (1936) observed three- and four-year-old children in an experimental play situation in which the children were exposed to dolls, rather than to real children. Manifestations of hostility, Levy noted, varied from slight movements to an urge to destroy by biting, crushing, and tearing. By the age of three or four years, checks to this urge are already manifest, either by blocking it or permitting only a partial release. But once the hostile behavior is set in motion, it runs a well-defined course, characterized by attacks on the object. Following this, the child pursues one of three different kinds of self-redeeming behavior: self-punishment; attempts to make good the damage done; and various defensive measures, such as lies, evasions, and justifications.

watchful eye of her parents and must account for her absences from the home in a way that is rarely required of a boy.

As girls grow older and have an opportunity to observe affairs outside the home, they soon become aware of the social and economic advantages of being a boy. They are likely to secretly or openly rebel against their status as girls and demand rights and privileges equal to those enjoyed by their brothers. At no time is the difference between the treatment accorded the two sexes felt so keenly as it is during the adolescent years.

Because girls recognize society's attitude toward members of the female sex, many girls develop feelings of inferiority which affect their attitudes toward social relationships and their ability to succeed in whatever enterprises they may undertake. Other girls, to compensate for society's attitude toward them, develop an aggressive self-assertiveness and, in an attempt to establish themselves on a par with boys, frequently antagonize others.

"Hybrid" feminine names, given to girls whose parents had earnestly wished for a boy to bear the father's name, are a constant reminder to the girls who have these names that their sex was a keen disappointment to their parents. Common among these hybrid names for girls are Josephine, Pauline, Paula, Georgene, Alberta, and Donna.

In spite of the fact that it is more frequently the father than the mother who is anxious that the first-born should be a boy, or that the majority of the children in the family should be boys, the father generally shows favoritism toward his daughters and acts as a strict disciplinarian toward his sons. Gardner (1947) found that fathers spent more recreational time with their daughters than with their sons.

5. Home Setting

The kind of home that the child has will have a marked influence on his whole outlook on life. Children who are brought up in a home where the family is large are frequently given inadequate food and training for wholesome development. In spite of the fact that some children do rise above these unfavorable home conditions and develop into outstanding citizens, these are more likely to be the exceptions than the general rule. Children who come from very small families, on the other hand, are likely to receive too much parental attention, with the result that they develop habits of dependency.

Relatives. The presence of grandparents or other relatives in the home is bound to influence either directly or indirectly the child's behavior, depending upon the status of the relatives. Should the child's parents, for example, be living in the home of grandparents, it is frequently necessary for them to defer to the wishes of the grandparents, to insure har-

e. Protection. Protective reactions appeared more frequently among older (77) than among younger (10) sisters, and were more often directed toward sisters than toward other children.

f. Helping. Helping others occurred more often among the older (154) than among the younger (55) sisters.

g. Giving and Lending. These were more characteristic of the older sisters.

h. Affectionate Responses. Affectionate responses were nearly three times as frequent among the older as among the younger sisters. All the affectionate responses of the younger sisters were of a physical nature, while about 50 per cent of those of the older sisters were physical and the rest were verbalizations.

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4. Sex of Child

A child's being either a boy or girl will have a marked influence on attitudes and behavior. At an early age the child senses that parents, as a general rule, prefer boys to girls as far as the first-born is concerned. Even among later born children, boys are generally given more freedom and more privileges than girls. The girl is brought up under the ever-

watchful eye of her parents and must account for her absences from the home in a way that is rarely required of a boy.

As girls grow older and have an opportunity to observe affairs outside the home, they soon become aware of the social and economic advantages of being a boy. They are likely to secretly or openly rebel against their status as girls and demand rights and privileges equal to those enjoyed by their brothers. At no time is the difference between the treatment accorded the two sexes felt so keenly as it is during the adolescent years.

Because girls recognize society's attitude toward members of the female sex, many girls develop feelings of inferiority which affect their attitudes toward social relationships and their ability to succeed in whatever enterprises they may undertake. Other girls, to compensate for society's attitude toward them, develop an aggressive self-assertiveness and, in an attempt to establish themselves on a par with boys, frequently antagonize others.

"Hybrid" feminine names, given to girls whose parents had earnestly wished for a boy to bear the father's name, are a constant reminder to the girls who have these names that their sex was a keen disappointment to their parents. Common among these hybrid names for girls are Josephine, Pauline, Paula, Georgene, Alberta, and Donna.

In spite of the fact that it is more frequently the father than the mother who is anxious that the first-born should be a boy, or that the majority of the children in the family should be boys, the father generally shows favoritism toward his daughters and acts as a strict disciplinarian toward his sons. Gardner (1947) found that fathers spent more recreational time with their daughters than with their sons.

5. Home Setting

The kind of home that the child has will have a marked influence on his whole outlook on life. Children who are brought up in a home where the family is large are frequently given inadequate food and training for wholesome development. In spite of the fact that some children do rise above these unfavorable home conditions and develop into outstanding citizens, these are more likely to be the exceptions than the general rule. Children who come from very small families, on the other hand, are likely to receive too much parental attention, with the result that they develop habits of dependency.

Relatives. The presence of grandparents or other relatives in the home is bound to influence either directly or indirectly the child's behavior, depending upon the status of the relatives. Should the child's parents, for example, be living in the home of grandparents, it is frequently necessary for them to defer to the wishes of the grandparents, to insure har-

mony in the home. Children, as a result, suffer from the discipline of two generations with different and often conflicting views on child rearing.

Maternal relatives, especially grandparents, exert more influence as a rule on the child than do paternal relatives. The mother is more influenced by the members of her family than by her in-laws, and she is more willing to accept suggestions and advice from her mother about the upbringing of her children than she would from her husband's relatives. It is not at all unusual for a mother to develop feelings of inferiority and inadequacy about her role as a mother when she is subjected to criticisms and suggestions on child rearing by well-meaning relatives. This is quickly reflected in her authority over her children and gives rise to objections of the part of the children to interference by their relatives in their home affairs.

Social Status. The social status of a family and the location of the family's home will influence the child's attitudes both directly and indirectly. Because the location of the home in the community determines to a large extent what kind of associates the child will have, the setting of the home is very important. Favorable or unfavorable attitudes will be developed, depending on the kind of children the child is associated with in school and in his recreational activities.

Indirectly, the social position of the family is a factor of importance through parental attitudes toward their social position. When parents accept their social status cheerfully and develop congenial interests and friendships with their neighbors, the child has a favorable pattern to imitate. On the other hand, parents who rebel against their social position not only give the child a pattern of social inadequacy to imitate but develop in him pressures for social acceptance and success which color his adjustments to the individuals with whom he comes in contact.

Economic Status. The economic status of the home, which frequently determines what the social status of the family will be, is especially important when it is markedly favorable or unfavorable. Commenting on the effect of poverty, Teagarden (1948) has said, "The parental anxiety that is engendered by poverty, together with possible malnutrition and overcrowding, will in many cases cause psychic wounds." Equally unfavorable is a home setting of great wealth, in which children are neglected by their parents and are brought up by servants whose ignorance of child rearing and lack of interest in the children produce even more harmful effects on the child's attitudes than those suffered in homes where poverty predominates.

A comparison of behavior problems in children from high and low socioeconomic groups was made by Pisula (1937), who found little difference between the two groups in faulty habits, with more eating difficulties

in children from poor than from comfortable homes. Aggressive personality problems—such as stealing, truancy, and running away—were more common in the poor homes. Submissive personality traits—such as overdependence, educational difficulties, and school maladjustments—on the other hand, were more often found among children who came from economically superior homes. Sewall (1930) found that jealousy increased as family income decreased.

Meltzer (1936) studied the problem of the effect of the economic level of the family on children's attitudes toward their parents in the case of children of three economic groups—poor, middle, and rich. His findings led him to conclude that economic insecurity makes for emotional insecurity. The children from the lowest economic level compared unfavorably in all aspects with those of the better economic level. Economic security, Meltzer found, does not necessarily imply emotional security. Most instances of emotional security were noted in the children of the middle group, rather than in those of the richest. This, he commented, was because parents of the middle group accept their own realities and are at home with the style of living which goes with the amount of money they make. Ulton (1936) found that economically favored parents deal more intelligently with their children than do less favored parents. He likewise found fewer behavior problems among children of economically favored parents.

Maladjusted Parents. Marital adjustment is a factor of great importance in the child's adjustments to life. Among preschool children, whose environment is limited mainly to the home, the attitude of parents toward one another is more important, Baruch (1937) and Baruch and Wilcox (1944) found, than it is among older children, whose environment includes many factors other than those of the home. There are certain items in interparental relationships which are significantly related to child adjustment. These include tension over sex, lack of consideration, inability to talk over differences to mutually acceptable solutions, and lack of expressed affection.

Other items in interparental relationships which these investigators found were not significantly related to child adjustment were tension over lack of cooperation in the upbringing of the child; extramarital relations; tension over health, friends, relatives, work, finances; differences in tastes; and leisure pursuits. The types of tension that had the greatest influence on the child were those relating to affectional and ego values lying within the relationship of one partner to the other.

Marital discord, which plays such a harmful role in the child's adjustments, comes from social maladjustment, sexual maladjustment, disagreement over discipline, disagreement over desire for children, interfering

relatives, and economic dissatisfaction, Lewenberg (1932) reported. Less important in causing discord were differences in religion, nationality, age, and education.

Children from homes where one or both parents were psychotic or criminal, Bender (1937) found, showed behavior problems due to disturbed parent-child relationships, treatment of the child by the parent, or the broken home. Psychopathic behavior problems develop in children who have an unsatisfactory home life in their first five or six years of life, before their personalities have developed. In general, Bender noted, there are more behavior problems in children of psychotic mothers than of psychotic fathers. Only when the father's condition destroys the integrity of the home are children likely to suffer through the secondary loss of the mother.

6. Parental Ambitions

From the moment of a child's birth, and often from the time of its conception, parents develop ambitions for the child, which they strive hard to have the child attain. Without taking into consideration the child's abilities or disabilities, his interests or ambitions, overambitious parents plan for his future so as to fulfill their own ambitions or to satisfy some thwarted wishes in their own lives.

Parents, Anderson (1946) commented, form a concept of an idealized child, against which they compare or rate their own child. This ideal varies with the educational, social, or economic status of the parents and with their opinions on the way to train a child. There are relatively few parents, however, who do not have some ideal for their children and who do not measure their children's achievements against this ideal.

Smith (1931) found that parental ambition took the forms of ambition for educational success, for social success, and for financial success. What mothers and fathers want in their children is well illustrated in Fig. 84 based on a study made by Radke (1946). As may be seen from the data presented in this figure, mothers and fathers are anxious to have their sons and daughters popular with children, bold, and daring. Quiet, sweet and babyish, submissive, and "little lady and gentlemen" behavior have less appeal for them.

Effect on Child's Behavior. What effect parental ambitions will have on the child's behavior is well illustrated in the findings reported by Smith (1931). According to these findings, quarreling, disobedience, and irresponsibility were the conduct disorders most frequently found in children whose parents were overambitious for them. Of the group studied, 52 per cent were failing in school, and 32 per cent engaged in fantasy and daydreaming.

Commenting on parental ambition and its effect on the child, Rand, Sweeney, and Vincent (1942) state, "Trouble arises when the parental wish becomes selfish. When the major drive behind the wish is gratification of the parental ego or a desire to live again one's own life through

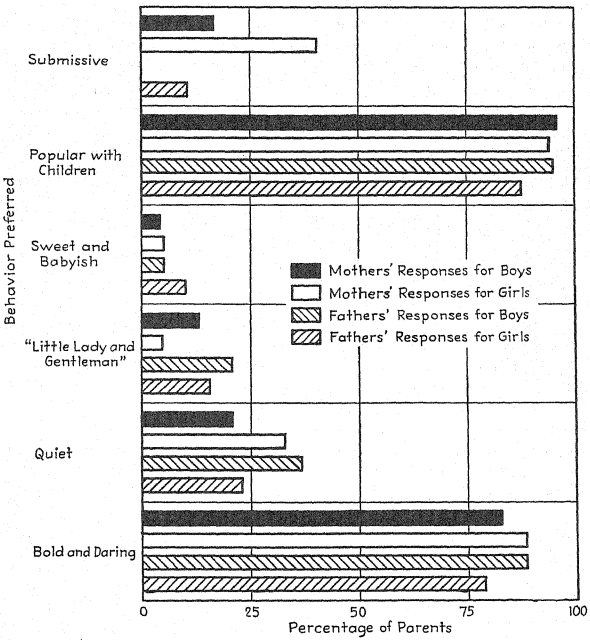

FIG. 84. Mothers' and fathers' preferences in boys' and girls' behavior. (*From M. J. Radke, The relation of parental authority to children's behavior and attitudes. University of Minnesota Press*, 1946, p. 85. *Used by permission.*)

the child, parents rob the child of individuality and force the development of interests that are not native or dwarf capacities that should be dominant" (p. 413).

"Parental exploitation," or forcing the child to make good in order to fulfill the parents' ambitions for the child, has very marked effects on

the child's social relationships and on his attitudes toward himself and his status in the group, Martin (1943) found. The child who has been exploited often complains, whines, and feels cheated. He is precocious in talk and dress, and has a compulsion to compete and a desire to excel over all others. He is a "poor sport" and, to avoid making a mistake, he avoids situations in which he is not certain of success.

7. Parental Attitudes

Few areas of child study have changed so radically in the last decade or two as that relating to the attitudes of parents toward the child that will foster the most wholesome mental and emotional development. Around the turn of the century, Freud (1913) contended that too much "parental tenderness" accelerates sexual maturity, "spoils" the child, and makes him unfit to be satisfied with a smaller amount of love in later life.

This attitude toward too much interest in and affection for the child was echoed by many American psychologists. The one who sounded the loudest warnings was J. B. Watson (1928), who during the twenties advised parents to beware of too much mother love, because of the harmful effects on the personality development of the child as he grew older. In a book written specifically for parents, Watson devoted a full chapter to the "dangers of too much mother love." A typical statement from this warning chapter reads: "All too soon the child gets shot through with too many of these love reactions. In addition the child gets honeycombed with love responses for the nurse, for the father, and for any other constant attendant who fondles it. Love reactions soon dominate the child." The sensible way of treating children, Watson stressed, is to "treat them as though they were young adults."

Such adult effects of too much coddling in infancy as invalidism supplied the justification used by Watson for the stand that he took. He concluded his advice to mothers with the statement, "In conclusion, won't you then remember when you are tempted to pet your child that mother love is a dangerous instrument? An instrument which may inflict a never healing wound, a wound which may make infancy unhappy, adolescence a nightmare, an instrument which may wreck your adult son or daughter's vocational future and their chances for marital happiness" (p. 87).

Now the pendulum has swung to the opposite extreme. It is agreed that mother love and affection are needed for good mental health. Too much, rather than too little, affection should be shown the child, especially during the helpless years of infancy and babyhood. One of the

strongest exponents of the importance of mother love and love in general in the child's life is Ribble (1943). According to her,

> Poor relationship with the parents leads to reactions in the infant which tend to become the basis of adult personality disorders. The most important asset of the baby as he begins life is two emotionally healthy parents. His deepest need by far is the understanding care of one consistent individual, his mother. Perhaps in time we shall recognize the danger of the emotionally unhealthy personality and shall see that emotional disturbance in the parents is as dangerous as is tuberculosis or syphilis (pp. 109–110).

Zachry (1940*a*) has related the experience of one hospital where babies were cared for in an efficient and impersonal way. One pediatrician noticed that these babies did not respond as quickly to smiling or other social stimuli as do babies brought up in their own homes. So, the regulation was made that nurses were to cuddle the babies. After a time, the babies gained in weight, smiled, and responded to adults.

Effect of Parental Attitudes. Studies of the effects of parental attitudes on the attitudes and behavior of children have revealed how important is the role that they play. The children who become successful as they grow older and come into contact with people outside the home are almost always those who are from homes where parental attitudes toward them have been of a wholesome type. The unsuccessful children, by contrast, are frequently the product of unhealthy parental attitudes. This point of view has been stressed by Miles (Anderson, 1946), who has pointed out that

> attitudes of parents appear to be crucial factors which are closely related to the social behavior of children. Parents of successful leaders show outstandingly different attitudes from parents of other groups of children. The contrast is most marked when they are compared with parents of asocial children, especially parents of outcasts and overlooked children.
>
> In general, parents of successful children are less inclined to protect children from the normal risks of life, to shield them from the normal responsibilities of life and to prevent them from developing an adequate degree of independence which is so necessary for good mental health, and normal functioning in the social group. Also, they tend to be less restrictive in the degree of control which they exercise over the child. Much more leeway is allowed the children in making decisions, using judgment, and experimenting with new situations.
>
> Also the individual personality is given far more respect—his rights and his opinions are given consideration in the family group. In addition, parents of successful children appear to possess superior ability in evaluating forms of child behavior and characteristics of child personality which are desirable for the optimum development of the child himself (p. 95).

To determine how important parental attitudes toward children are in

the child's social and emotional adjustment, Lewis (1945) studied the personal inventories of children whose parents were rated as manifesting a superior, an average, or an inferior attitude toward the child and the home. Lewis reported a very definite trend. Children whose parents were rated as having a "superior" attitude obtained more desirable scores on the personal inventories than did those whose parents had an average or an inferior attitude.

When parental attitudes toward the child are unfavorable and the child is deprived of the attention and affection every normal child needs and is entitled to, the effects on his behavior are far-reaching in their harm. The child who is neglected and deprived of parental relationships, Martin (1943) found, is hungry for affection and wants to be part of a group. He wants to be everywhere and is afraid of missing out. Furthermore, he is overwilling to please and to do things for others. All this, it is apparent, is a form of compensation and an attempt to buy affection at any cost.

Typical Parental Attitudes. Although each parent has his or her own attitude toward each child in the family and toward child-rearing methods, there are certain attitudes which are fairly universal in the American culture. These are the product of tradition, of parental teachings, and of experiences in living with children. Using the Peters' Attitude Scales, Harris (1948) compared the attitudes of parents toward children in 1930 and at present. He found present-day attitudes to be more liberal than those held 15 or more years ago. Furthermore, the social groups of today are more homogeneous in attitude than the groups of the earlier period. Differences within the groups, he noted, outweighed at both times the differences between the groups.

In a critical analysis of different studies relating to parents' attitudes toward children, Stogdill (1936) found that parents on the whole are highly conservative in their attitudes toward children. They approve of child behavior which makes for smooth running of the household, but show little regard for the personality development of the child. They endorse strict control over the child, are inconsistent or ambivalent in certain of their attitudes toward children. Women are slightly more liberal than men in this respect. Unwholesome parental attitudes are generally associated with religious, social, and economic conservatism and with educational and socioeconomic deprivation.

Lafore (1945) analyzed parental practices as a means of determining characteristic parental attitudes toward children. He observed that praising and displaying affection, though used in relatively few instances, were particularly strong techniques. When used at all, they were used primarily as expressions of admiration or endearment, not as incentives

Ignoring and diverting were likewise found to be successful practices when employed in legitimate situations, as ignoring or diverting attention from such undesirable behavior as crying and minor misdeeds.

Attitude toward Freedom. Present trends have been to give the child more opportunity to develop without the hampering influence of too many parental controls. Parents of today are gradually accepting this principle and many are bringing up their children in accordance with it.

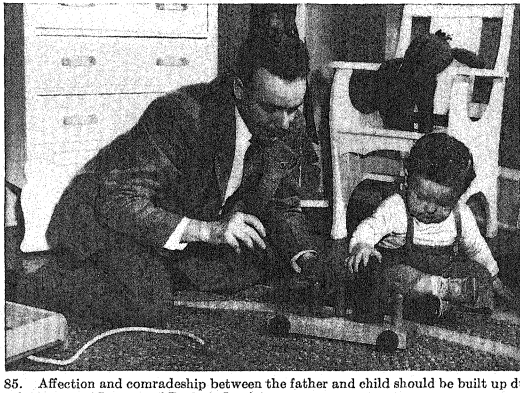

FIG. 85. Affection and comradeship between the father and child should be built up during the early years. (*Courtesy of Frederic Lewis.*)

Thus, the attitude that children need more, rather than less, freedom from parental restraints is advancing step by step.

Grant (1939), investigating the effects of the home environment and parental attitudes on the young child's behavior, found that children from homes that encouraged development and expression of ideas were resourceful, cooperative, self-reliant, and showed perseverance. They could play with a group of children and assume responsibility. A calm, happy home life encourages security in the child, cooperativeness, and the ability to play with the group.

What effect parents' attitudes toward freedom for children will have on the child's behavior has been investigated by Read (1945), who found that children whose parents approved of freedom for them showed more favorable than unfavorable behavior. Unfavorable behavior, on the other hand, was more frequently associated with parental approval of strict control. These results were especially marked when both parents

agreed on the type of control. When the mother was more liberal than the father, the child showed more favorable behavior than when the father was the more liberal parent. Likewise, a more conservative mother led to more unfavorable behavior than resulted from the father's being the more conservative member.

To measure parental attitudes toward self-reliance on the child's part, Oj'emann (1934) constructed a scale, sample items of which are the following:

1. I think that a child should carry food with a spoon from a dish to the mouth without spilling (does not imply never spilling), throughout an entire meal, by the age of —

17. I think a child should be able to remove all his indoor clothing when it has been unfastened for him by the age of—

35. I think a child should be able to dry the dishes (not scald them) after a family meal by the age of —

(Pages 345–347)

Sample items from a scale devised by Koch *et al.* (1934) to measure adult attitudes toward children's freedom are likewise interesting.

2. When a child's wants and those of an adult are in conflict, the child should receive the more consideration.

4. A preschool child should never be allowed to have his own way.

12. Children should be given reasons for the restrictions placed upon them.

19. A child should be forced to obey if he does not do immediately as he is told.

(Pages 254–255)

Women, it was found, were more liberal than men in their attitudes toward children's freedom, especially among the best educated. Adults who professed to have no contact with children tended to be stern, while those who had contacts, especially the teaching groups, tended to be rather lenient. Age and single or marital status did not conspicuously affect the individual's attitude.

Changes in Parental Attitudes. Parental attitudes do not remain constant. They change from time to time, depending upon such factors as the physical and emotional condition of the parent, memories of the way they were treated in similar situations when they were children, the economic status of the family, etc. Baldwin *et al.* (1945) emphasize the fact that the attitude of parents toward a child depends upon the changes in pattern of living brought about by the child, the value placed by the mother on parenthood in comparison with her premarital status, the personality and behavior of the child, and the attitude toward children in the group to which the parents belong.

A casual attitude toward children, these investigators found, is char-

acteristic of those parents who feel that they have adopted more modern methods of child training. They make a conscious attempt to be sympathetic with their children and to understand the child's point of view. They go so far sometimes as to be slightly indulgent.

How parents' attitudes and behavior change during pregnancy has been investigated by Baldwin (1947*a*), who found the changes toward only children most marked. The arrival of a new child tends to reduce the warmth and contact between the parent and the other children and to result in a more restrictive, but less effective home. Temporary changes occurring during pregnancy were in the amount of activity in the home and understanding of the child. Because many of the changes were similar to those that he found in the cases of children of different ages, Baldwin concluded that changes in parental attitude may be more a matter of the child's age than of pregnancy.

As a child grows older, there is less contact between parent and child, there are fewer restrictions placed on the child, there is more hostility on the part of parents when the child rebels against restrictions, and there is less display of affection. To determine just how great the influence of the child's age is on the attitude of the parents toward the child, Baldwin (1945) compared the behavior of parents toward their children in the case of a group of three-year-olds with the behavior of parents of nine-year-olds. He found that parents of nine-year-olds were less warm and affectionate, less intellectually stimulating, less indulgent, and more restrictive in their control of children than were the parents of the three-year-olds. These changes, Baldwin explained, are due partly to the general growth of independence during childhood and partly to changes in cultural standards for handling children of various ages. One of the important factors, Baldwin (1947) noted, in bringing about this change is the birth of a younger sibling.

"No parent," Macfarlane (1941) maintains, "in spite of the most strenuous efforts, can have identical feelings toward his children." Feelings of parents are influenced by many factors, especially the parent's own background and family relationships. For example, a father who, as a boy, had a deep affection for his sister, is bound to reflect this feeling in his attitude toward his own children and to show greater affection for his daughters than for his sons. The carry-over of these feelings from the parents' own childhood experiences, Macfarlane holds, is bound to influence parent-child relationships.

Measurement of Parental Attitudes. Measurement of parents' attitudes toward children started as early as 1899, when Sears (Stogdill, 1936) used a questionnaire to study adult attitudes toward the punishment of children. At the present time, three methods are in use for

measuring parental attitudes: *direct observations* of behavior; *rating scales;* and *inventory-type questionnaires.*

An example of *direct observations* is Merrill's (1946) study of maternal behavior in play situations, as viewed through a one-way screen. *Rating scales* are more numerous and more widely used as measures of parental attitudes. Champney's (1941) "Fels Parent-Behavior Rating Scales are made up of 30 variables, samples of which are

1. Adjustment of home: maladjusted—well-adjusted.
6. Child-centeredness of home: child-subordinated—child-centered.
20. Babying: withholds help—overhelps.
25. Solicitousness for child's welfare: nonchalant—anxious.

When Stogdill (1933) asked parents to rate according to the degree of undesirability certain forms of childish behavior, he found that the behavior they considered most undesirable was that which violated moral taboos (such as lying, stealing, and sex experience); opposition to parental control (such as talking back, disrespect for elders, and criticizing parents); and interruptions of household routine (as carelessness and bad table manners). These parents regarded it as most undesirable for a child to deviate from the group standard of conduct. How parents feel about parental behavior, Stogdill (1935, 1936) measured by means of an attitude scale. The parents, he found, regarded as especially harmful those forms of parental activity which allow the child a certain degree of aggressiveness, independence, and freedom from moral repression.

The third type of measure of parental attitudes, the *inventory type of questionnaire,* may be illustrated by the University of Southern California Parent Attitude Survey reported by Shoben (1949). This questionnaire consists of 148 items. Parents are asked to rate as to whether they agree strongly or mildly, or disagree mildly or strongly. Samples of statements, and the categories to which they belong, are these:

Ignoring

A child should be seen and not heard.
Parents cannot help it if their children are naughty.
Quiet children are much nicer than little chatterboxes.

Dominating

Children have the right to play with whomever they like.
It is wicked for children to disobey their parents.
Parents should never try to break a child's will.

Possessive

Parents should sacrifice everything for their children.
Children should be "babied" until they are several years old.
A child should always love his parents above everyone else.

When Gardner (1943) asked fathers about their own weaknesses as fathers, 32 per cent referred to defects in companionship, 30 per cent to defects in discipline, 20 per cent to defects in the teaching of character traits, and only 5 per cent to defects in provision for the child's welfare.

8. Parental Overprotection

Parental overprotection, according to Levy (1939, 1943), consists in *excessive contact* of the parent with the child, such as fondling him excessively or sleeping with him; *prolongation of infantile care,* as nursing or bottle feeding too long, bathing and dressing when the child can do it himself; *prevention of the development of self-reliance* by supervising the child's activities too much, defending him, or solving his problems; and *lack or excess of parental control,* either by overindulgence or insistance on strict obedience.

Causes of Parental Overprotection. Parental overprotection, which is more commonly found among children of the more favored socioeconomic groups than among those whose parents have neither the time nor the energy to "baby" them, is primarily the result of unfavorable parental attitudes toward the role the child should play in the social group. These unfavorable attitudes may come from ignorance on the parents' part of what the child is capable of doing at a given age, or they may be the direct result of unhealthy parental attitudes fostered by unfavorable childhood experiences.

According to Levy (1930), there are numerous causes of overprotection, the most common of which are *long period of anticipation and frustration* during which the woman's desire for a child is thwarted by sterility, miscarriages, or the death of infants; *conditions in the child,* such as physical handicaps and illnesses that frighten the parents, or that make the child less likely to survive than other children; *sexual incompatibility* between husband and wife; *social isolation; emotional impoverishment* in early life and an unhappy childhood; *development of dominating characteristics* from undue responsibility in childhood and continuance of this role in marriage; and *thwarted ambitions.*

Effects of Overprotection. What effects parental overprotection will have on behavior and on social and educational achievement has been studied not only during the childhood years but as the children grow older. To date, there has been no report of favorable effects of overprotection. On the contrary, everything points to the fact that the overprotected child is handicapped to the point that success in later life will be difficult, if not impossible.

As Flügel (1929) has pointed out, overprotective parents, especially those who possess strong tendencies to self-assertion, often bring about a

state of revolt against their own authority. If this occurs, all that may be good in that authority is "deliberately neglected or condemned," Flügel maintains, "since the children have grown to look upon their parents as tyrants and taskmasters rather than as helpers and protectors."

Nervous tendencies are common among overprotected children. According to Cummings (1944), there are more nervous symptoms—such as excitability, shyness, restlessness, generalized anxiety, and lack of concentration—among children whose parents baby them and make them the center of home life than there are among children who are not so overprotected. When the household is allowed to revolve around the child and he is treated like a baby, the result will be *infantile reactions,* Hattwick (1936) found. The child will waste time, ask unnecessary help, cry easily, dawdle, have temper outbursts, and leave tasks incomplete. Furthermore, he will show a preponderance of *withdrawing reactions,* such as shrinking from notice, staying near adults, and avoiding others. He will be poorly adjusted to social relationships and will *lack emotional* control.

Martin (1943) not only noticed many *nervous mannerisms* among the overprotected children but he also stressed the fact that they were *immature looking, withdrew from competitive association* with other children, and openly *refused responsibility.* They seemed to be *afraid to grow up,* had *no confidence* in their abilities, were *easily influenced,* and were *dependent on the group.* They developed into typical "yes men."

What effect overprotection has on the child's *academic success* has received some attention. According to Levy (1933), among overprotected children there is a marked acceleration and interest in reading, but retardation in arithmetic. The acceleration in reading is due, Levy pointed out, to the advantages of verbalization from adult association. But, in the case of arithmetic, overprotection has made it hard for the child to tackle new problems, and he has fewer chances to use money.

Hattwick and Stowell (1936) studied the academic records of overprotected children, from kindergarten through the sixth grade. These records were then compared with records for children from well-adjusted homes. In Table LXXIII is shown the relation between overattention on the part of parents and the child's work habits. Data were based on teachers' descriptions of poor work habits.

As may be seen from the data given in Table LXXIII, behavior which necessitates the time and attention of the teacher heads the list; next is work that fails to meet proper standards. The child's approach to his work—drawing, carelessness, lack of system, etc.—is more common in children from homes where parents are overattentive than in children from well-adjusted homes. This tendency, Hattwick and Stowell found,

increased as children grew older. The result was a vicious circle. When the child gets along poorly at school, the parents become even more attentive and, in turn, the child does even worse work. "Only when the home is well-adjusted," they commented, "can we have any assurance that the work of the school will be successful."

TABLE LXXIII. POOR WORK HABITS

Behavior	Percentage of occurrence	
	Home where child is pushed or babied	Well-adjusted homes
Needs pressure, encouragement, supervision, or individual attention from teacher	96	16
Doesn't work to capacity; meager accomplishment; slow, inferior progress	89	23
Careless in work; poor, irregular work habits	60	15
Lazy mentally; loafs and wastes time; dawdles	29	7
Easily discouraged; good at first but doesn't like to see work through	27	3
Distractible; no concentration	26	3
Indifferent; no interest	18	0
No perspective or philosophy toward work; poor organization of work	16	3
Works fitfully; spasmodically	14	1
Needs self-confidence	11	1
Slow at starting work	7	5½
Avoids disliked work	7	4
Persistent and concentrates only when likes what he is doing	7	1
Apt to be resentful; sullen	7	3

Source: HATTWICK, B. W., and STOWELL, M. The relation of parental over-attentiveness to children's work habits and social adjustments in kindergarten and the first six grades of school. *J. educ. Res.*, 1936, **30**, abbreviated from p. 172. Used by permission.

The effects of overprotection on *social adjustment* was likewise investigated by Hattwick and Stowell (1936). The most important indications of poor social adjustment are summarized in Table LXXIV. A comparison with children from well-adjusted homes shows how marked the poor social adjustment is in children from homes in which parents are overprotective.

The differences between the two groups, it is apparent, are marked. Children from well-adjusted homes are definitely better adjusted socially than are children from overattentive homes. From kindergarten through the sixth grade, Hattwick and Stowell noted, there was a tendency for

children who were babied at home to develop more social difficulties and for children from well-adjusted homes, fewer.

Overprotected children are subject to *homesickness*. This occurs when the child is prevented from returning home and yet has a strong, emotionally charged desire to do so. Much can be done, McCann (1941) has pointed out, to prevent homesickness, not only in childhood but in

TABLE LXXIV. POOR SOCIAL ADJUSTMENT

Behavior	Percentage of occurrence	
	Homes where child is pushed or babied	Well-adjusted homes
Socially immature	52	7
No sense of responsibility; not dependable	40	7
Nervous, high strung	36	14
Agrees too readily; a follower	26	11
Dependent on adults; a baby	26	7
Not well liked by others	26	3
Shy, self-conscious	23	15
Plays for attention	21	0
No initiative	19	3
Daydreams	15	7
Teases, annoys others	15	1
Withdraws from group	14	5½
Can't meet new situations well	14	1
Contrary, quarrelsome; a trouble-maker	14	1
Insists on own way; selfish; spoiled	14	1
Lacks self-reliance	12	3

Source: HATTWICK, B. W., and STOWELL, M. The relation of parental over-attentiveness to children's work habits and social adjustments in kindergarten and the first six grades of school. *J. educ. Res.*, 1936, **30**, abbreviated from p. 174. Used by permission.

later years. His suggestions included frequent visits away from home; prevention of strong emotional attachment to the home or any item in it; and development of a well-rounded personality.

9. PARENTAL REJECTION

Parental rejection need not necessarily mean overt rejection of the child, as many people believe. According to Baldwin *et al.* (1945), rejectant behavior is characterized either by nonchalance, inertness, and a general atmosphere of unconcern for the child's welfare, or by an active dominance and a conspicuous hostility in the parent's treatment of the child. Frequently in rejection, the parent's feeling of guilt is so covered up by attempts to compensate for such an unsocial attitude that the

impression is created that the parent is overprotective. As Symonds (1938) has described it, the attitude of parents who reject their children is covered with a "coating of ostensible affection and pleasant relations."

Newell (1934, 1936) has noted three types of rejection: *overt rejection*, consisting of undisguised forms of neglect and cruelty and a hostility to the child in which the parent is irritated by the child, nags, punishes severely, or threatens to put away; *overprotection*, assumed to compensate for feelings of guilt for having rejected the child; and *ambivalence*, or inconsistency of handling, in which overt hostility and overprotection vie with each other for dominance. Newell noted that rejecting mothers were more often ambivalent and fathers, more often hostile, in their handling of their children. Few mothers or fathers showed overprotection. Mothers were most often ambivalent toward sons and hostile toward their daughters. Fathers, on the other hand were found to be hostile toward their sons and protective or ambivalent toward their daughters.

Causes of Rejection. What causes parents to reject their children is a question that has received considerable attention. Newell (1934, 1936) has pointed out that, in the case of mothers, rejection stems from the mother's unhappy adjustment to marriage. For the most part, this was caused by the emotional instability of one or both parents and to their emotional immaturity. Gleason (1931) studied case histories of mothers who rejected their children and found that out of the group, only two of the marriages were "love matches." Sexual relationships were definitely unsatisfactory in at least one-half of the cases. Most of the mothers were dissatisfied with their marriages because of the responsibilities or the clash of personalities entailed.

Symonds (1938) studied fathers who rejected their children, to discover what cause or causes were responsible for their behavior. He found that rejecting fathers were somewhat spoiled by dominating mothers in a poor home environment. The parents were poorly mated and quarreled, and the discipline of the children was harsh and inconsistent. Friction and nagging in the home were common. Rejecting mothers, he found, had irritable mothers and austere fathers.

Effect on Behavior. How parental rejection affects the child's behavior has been carefully investigated. For the most part, the effects were found to be bad and to produce antisocial behavior on the part of the child. Rejected children, Cummings (1944) found, tend to be "difficult" and to have a number of antisocial symptoms, such as aggression, stealing, lying, and cruelty.

Hattwick (1936) noted that a rejected child has tendencies to seek attention by showing off, to seek praise, to ask for unnecessary help, and

to manifest other forms of aggressive behavior associated with insecurity and emotional tensions on the child's part. Antisocial behavior, in the form of swearing and stealing, Martin (1943) found, is common among children who are rejected. They are also alert, shrewd, and cunning. They show a desire to grow up and wear mature clothes, to meet an unfriendly world. It is common for them to be distrustful and for girls to be tomboys when they feel that they have been rejected because of their sex.

Wolberg (1944) has stressed the fact that parental rejection jeopardizes normal security feelings, undermines the child's self-esteem, and induces catastrophic feelings of helplessness and a persistent sense of frustration. To overcome his helplessness and insecurity, the child develops aggressions, sibling rivalries, delinquency, truancy, emotional immaturity, and many other unsocial phenomena. "It can permanently disable the individual," Wolberg contends, "in his adjustment to life by undermining his security, crushing his self-esteem, and disrupting the functional development of the ego."

The behavior of rejected children, Newell (1936) found, is of four different types: *aggressive* (attention-getting, restless, disobedient, quarrelsome, etc.); *submissive* (poor in schoolwork, shy and seclusive, sensitive and fearful); *mixed;* and *stable*. Boys, it was found, are aggressive when either or both parents' handling is consistently hostile. Girls are aggressive when either or both parents' handling is ambivalent or when the father is hostile. Girls are submissive when the fathers are protective or ambivalent, and boys, when either parent is consistently protective. The children's attitude toward rejection, according to Newell (1934), showed that they recognized the parents' lack of affection, and they preferred the parent whose affection they were uncertain of.

A detailed characterization of rejected children made by Symonds (1938, 1939*a*) showed the following traits: excess of activity and restlessness, a tendency toward attention-getting behavior, and notorious records as troublemakers in school. They lack sustained application or concentration in school and show emotional instability. They are indifferent and apathetic to schoolwork, fail to establish desirable skills in school subjects or sports, are generally antagonistic toward society and its institutions, and show such delinquent trends as lying, truancy, stealing, and running away from home.

They do not communicate with adults, though they often want someone with whom they can discuss their problems. They are confused and bewildered about their plans, cannot appraise themselves objectively, and are inclined to rationalize by boasting. They often feel persecuted and indulge in self-pity. Many of them are suggestible and lack ambi-

tion. According to Fitz-Simons (1935), enuresis, feeding problems, nail biting, and other similar forms of problem behavior are common among boys who are rejected by their parents.

In spite of the bad features of rejection, Burgum (1940) has found some constructive values associated with parental rejection. She noted that, as a result of their experiences at home, rejected children are likely to develop some form of independence, are capable of amusing themselves and of developing a special interest. They are less likely to make good social adjustments outside the home, to show evidence of early maturity, or to be capable of accepting responsibility.

Clinical treatment of severely rejected children, Witmer *et al.* (1938) reported, is less successful than it is in most other clinical cases. This, they pointed out, shows how unfavorable home influences can hold sway.

10. Dominating Parents

In every home, there is apt to be one parent who dominates the whole family. A dominating parent usually comes from a family in which one or both parents were dominating. As a child, this parent was forced into submissiveness by his own parents. Later, as a parent, he dominates his own children in much the same way as he himself was dominated.

Effect on Behavior. What effects parental domination will have on a child's behavior and on his attitude toward life has been investigated by Symonds (1939, 1939*a*). According to him, the child who is dominated by one or both parents has better socialized behavior than the child who is given more freedom. He is honest, polite, and careful. But he is also likely to be shy, docile, self-conscious, submissive, and sensitive. He feels inferior, inadequate, confused, bewildered, and inhibited.

11. Submissive Parents

Just the opposite of the dominating parents are the submissive parents who give in to their children and permit them to dominate the home. The child's every wish is gratified if the parents can possibly fulfill it, even against their better judgment. The child literally bosses his parents and treats them with little or no respect. Maternal submissiveness in the form of overindulgence is, according to Levy (1939), a weakness in maternal control which consists of yielding to the wishes or actions of a child or submitting to demands not ordinarily tolerated by most parents. In its active form, it consists in willing catering to a child's whims and wishes.

Causes of Parental Submissiveness. Symonds (1939) found that parents who submitted to their children generally had inadequate personalities, characterized by childishness and failure to accept responsibility,

They, themselves, were children of submissive parents and imitated in their own behavior the behavior pattern set for them by their parents.

Effect on Behavior. How parental submissiveness affects the child's behavior has been studied by Symonds (1939, 1939*a*), who found that children treated thus are disobedient and irresponsible. They defy authority and are unmanageable, aggressive, stubborn, antagonistic, and careless. Yet, at the same time, Symonds stressed, they are independent and self-confident. Frequently they feel overconfident, self-important; they are given to boasting and are little inhibited. Maternal overindulgence, according to Levy (1939), results in infantalism on the part of the child and in a rebellious, defiant, and tyrannizing behavior toward the mother.

12. Parental Acceptance

Parental acceptance means an attitude on the part of parents which is characterized by a keen interest in and love for the child. The accepting parent not only wanted the child and, in many cases planned for him, but he did not find child care a trying or difficult job. The accepting parent puts the child in a position of importance in the home and develops a relationship with the child which is characterized by emotional warmth.

According to Baldwin (1948), there are different types of parental acceptance, which depend upon the emotional maturity of the parents. Emotionally immature parents are neurotically attached to their children and try to mold them into a form to suit their own standards. Mature parents, on the other hand, aim at the development of an independent individual and do all they can to achieve this goal, regardless of personal sacrifices.

Causes of Parental Acceptance. Symonds (1938) has studied parents who accept their children and compared their attitudes with those of parents who reject or neglect their children. According to him, "accepting" fathers have grown up with a kindly, intelligent, friendly, hard-working father and an intelligent, nondominating mother. The parents are compatible and happy together, wise and consistent in their discipline. "Accepting" mothers were found to have kind, intelligent, and stable fathers. They had good relationships with their mothers, brothers, and sisters. This, Symonds maintained, was as important in the homes of the mothers as it was in the case of the fathers.

Effect on Personality. According to Symonds (1938, 1939*a*), accepted children are generally characterized as being socialized, cooperative, friendly, loyal, emotionally stable, and cheerful. They care for their own property and that of others. They are honest, straightforward and dependable, face life confidently and have clear ideas about their plans and

tried to discover what notions boys and girls have of their parents. Girls, he found, have a more emotional relationship with their parents than do boys. The mother evokes more emotional responses from both boys and girls than does the father. Children have greater affection for the mother than for the father. Parents, according to the children, are people who do things for you, such as taking you to places, playing with you, and taking care of you. Nearly two-thirds of the children questioned thought of parents in the form of some dependence.

The child's concepts of his parents are in terms of activities, personal characteristics, relations with them, etc., Radke (1946) reported. In Table LXXV are summarized the different ways in which children describe their mothers and fathers.

TABLE LXXV. CHILDREN'S DESCRIPTIONS OF MOTHER AND FATHER

Description given by child	Percentage of responses	
	About mother	About father
Activities:		
Housework	54.0	15.0
Goes to work	0.0	23.0
Works around (mechanical type)	0.0	6.0
Goes to school, studies, writes	3.3	4.0
Self-recreation or relaxation	4.0	24.0
Personality characteristics:		
Man-woman	11.0	6.0
Big and strong	0.7	2.0
Interpersonal relations:		
Supervision and care of child	18.3	2.0
Plays with child	2.0	4.0
Punishes child	4.0	6.0
Affection given to child	2.0	1.0
Mother-father interaction	0.7	4.0
Miscellaneous	0.0	3.0

SOURCE: RADKE, M. J. *The relation of parental authority to children's behavior and attitudes.* Minneapolis: Univ. of Minnesota Press, 1946 p. 69. Used by permission.

As may be seen from the data presented above, children's concepts of their parents are more often based on parental activities than on the physical appearance or personality make-up of the parents. For the most part, they think of their parents in terms of the work the parents do and the time and energy devoted to their relationships with them.

When Radke asked the children about the fun they have with their parents, the majority of the children (67 per cent with the father and 52 per cent with the mother) reported that playing games was the most

frequent forms of fun. Other forms of fun mentioned were doing housework with the mother, going places and turning somersaults with the father, and having the father give them things.

Concept of "Father." Just what "father" means to a child has been investigated, also. Most children, it has been found, have a fairly clear-cut, definite concept of "father," which differs markedly from their concept of "mother." According to Meltzer (1943), children think of "father" as a person who participates in various activities, takes care of the child, is a disciplinarian, and does things for a child.

The parental role of the father, as described by children six to twelve years of age, Lerner (1937) has summarized as follows:

He

1. Punishes most of the time and punishes the hardest.
2. Is the oldest in the family, a matter of seniority as such.
3. Owns more, he is the one who works, earns the money and, therefore, his property, whatever it is, is more important and valuable because he can pay more money for it.
4. Knows more, a matter of omniscience.
5. Is, in general, more important; he is the head of the family, the ruler, the 'boss'; a matter of omnipotence and supreme social status. (Page 27)

Concept of "Mother." Because of the closer contact of the child with his mother than with his father, it is not surprising to find a more definite concept for mothers than for fathers. And, because most children have more highly emotional associations with the mother than with the father, their concepts are likely to be emotionally tinged. According to Meltzer (1943), children think of "mother" as a person who does things with and for them, who takes care of them, and who has a close relationship with them.

The role of the mother, as described by six- to twelve-year-olds, according to Lerner (1937), is as follows:

1. The mother is weaker and therefore needs protection.
2. She brings you into this world, brings you up, does more for you, and, in general, protects you.
3. Mothers are somehow much dearer, they love you more, they are the best friends you can have; in short, they specialize in affection. (Page 30)

How children feel toward a working mother has been investigated by Matthews (1934) in the case of fifth- and ninth-grade children. According to the children's own reports, 89 per cent of them approved of the mother's staying at home most of the time, while only 40 per cent approved of out-of-the-home employment. Children of working mothers were less happy than those of nonworking mothers, but the difference was small.

Disliked Parental Traits. Children not only have definite concepts of what a mother and father should be, but they also are aware of weaknesses in parents. There are certain things of which they disapprove or which they dislike in parents. Every parent is keenly aware of the fact that sons and daughters, even before they reach the age of adolescence, become hypercritical of their parents. Frequently, however, parents do not know exactly what it is that their children dislike about them.

In interviews with children, Radke (1946) was able to get some information on what it is that they say they dislike in their parents' behavior. In Table LXXVI are presented the different types of parental behavior disliked by children and the frequency with which this disliked behavior is reported.

TABLE LXXVI. TYPES OF PARENTAL BEHAVIOR DISLIKED BY CHILDREN

Type of parental behavior	Disliked in mother, per cent	Disliked in father, per cent
Punishing and interfering with play	46	50
Doing housework	10	0
Going to work	0	11
Running (going) away	5	5
Staying in bed	10	3
Miscellaneous	5	5
None	24	26

Source: RADKE, M. J. *The relation of parental authority to children's behavior and attitudes.* Minneapolis: Univ. of Minnesota Press, 1946, p. 67. Used by permission.

The thing that seems to annoy children most in their parents' behavior, as reported by the children questioned by Radke, is punishment and interference with their pleasures. Nearly one-fourth of the children had no complaints to offer about their parents' behavior. The other complaints occurred so infrequently that they are not worth considering. They may be regarded as individual "peeves" on the part of the child who reported them.

Gardner (1947) had fifth- and sixth-grade children of both sexes check items on a questionnaire relating to their fathers' behavior and attitudes toward them. In Table LXXVII are shown the most frequent criticisms the children made of their fathers.

The most frequent sources of dissatisfaction with the fathers, as reported by the children questioned by Gardner were scolding, general irritability, poor adjustment with the mother, swearing, and being away from home. Boys were found to be more critical than girls. The average number of criticisms checked by the boys was 6.3, and by the girls, 5.4.

When asked what they would like their fathers to do that they did not do, the children mentioned most often, "give me an allowance," "give me more money," "let me play more," "let me go to more shows," "talk

TABLE LXXVII. PATERNAL CRITICISMS

Behavior criticized	Percentage of cases	
	Boys	Girls
Scold	43	40
Lose his temper	37	38
Be cross	35	35
Quarrel with mother	36	29
Swear	30	33
Be away from home so much	31	22
Complain	26	22
Come home late at night	26	19
Grumble	25	21
Tease	20	26
Drink	24	18
Forget to shave	23	20
Read newspaper so much	18	23
Shout	24	14
Smoke cigar	21	16
Rub whiskers on you	17	18
Bang things	19	14
Spit	19	15
Use poor English	17	14
Be old fashioned	16	12
Dress shabbily	15	12
Smoke pipe	15	11
Be sulky, silent	16	10
Speak foreign language	13	11
Eat noisily	15	10
Chew tobacco	14	11
Talk so much	11	9
Repeat stories and jokes	12	7
Be so dirty	10	6
Whistle	2	3

Source: GARDNER, L. P. An analysis of children's attitudes toward fathers. *J. genet. Psychol.*, 1947, **70**, abbreviated from p. 7. Used by permission.

more with me," and "punish me less." The major emphasis, it may be seen, is on more gifts, more freedom, and more attention.

Approved Parental Traits. Children not only know what they dislike in parents but they also have fairly definite ideas of what they would like their parents to be and what traits they would prefer to have

their parents possess. In Table LXXVIII, based on a study made by Sowers (1937), are given the parental traits considered most desirable by children.

TABLE LXXVIII. PARENTAL TRAITS DEEMED DESIRABLE BY CHILDREN

Trait	Percentage
Companionable	21
Understanding	21
Kind	20
Exemplary	14
Loving and affectionate	12
Pleasant, having a good-natured disposition	10
Irreproachable, having no bad habits	9
Sympathetic	9
Cheerful, happy, jolly	7
Attractive in personal appearance, neat and clean	7
Honest	6

Source: SOWERS, A. Parent-child relationships from the child's point of view. *J. exp. Educ.*, 1937, **6**, abbreviated from p. 213. Used by permission.

The most important characteristics, these children felt, were personality traits that made their parents more interested in and sympathetic toward them. What they actually wanted in parents were not famous people, not outstanding individuals because of their wealth or achievements, but people who were interested in their children and their children's welfare.

"GOOD PARENTS"

What a "good parent" is, unquestionably, is a concept that will differ from one person to another. A few attempts have been made to formulate a scientifically acceptable concept of a "good parent," not only from the point of view of the adult but also from that of the child.

"Good parents," as viewed by Nimkoff (1934), are those who (1) evoke enthusiasm and engender a flare for something worth while in their children; (2) encourage effort, once the flame of interest has been kindled in the child; (3) provide children with ever-enlarging social horizons and interests; (4) share experiences with their children; and (5) cultivate self-reliance by equipping their children with resources for independent living. In summary, Nimkoff stressed, "Good parents are those who give to the world children who are happy as they look back to their homes, and eager and adequate as they look forward to the assumption of their own responsibilities. The social test of the success of any home is found in the ability of its members to live useful, happy lives of their own" (pp. 170–171).

Symonds (1939*a*) has defined "good parents" in the following way:

Good parents are generous–generous with food, toys, and with their own time and attention. . . . Good parents show their fondness for the child by including him in their activities, by being interested in him, and by showing pleasure at his growth and development. . . . When the child grows older, the parents are interested in his plans and ambitions, in his accomplishments in school, in his special interests and hobbies, and they give him every encouragement along these lines. Good parents treat the child not so much as a child but as a responsible or at least partly responsible individual. Though they treat his opinions with respect, they are careful not to demand more of him than can be expected from one at his stage of maturity (p. 151).

FIG. 86. "Good parents" are generous with their own time. (*Courtesy of Charles Phelps Cushing.*)

Children's Concepts of "Good Parents." The child's concept of what a good parent should be is, of necessity, different from the concept formulated by an adult. The child sees the parent from an entirely different angle from that of the adult, and this is partially responsible for the difference in point of view. Furthermore, because the child's relationship with adults in general, and with parents in particular, is different from that of an adult in similar circumstances, it is bound to affect the child's point of view.

From interviews with children, Martin (1943) listed the following positive parental factors as essential in good parents:

1. Parents are permissive or "giving."
2. Parents' first attitude toward a good school report is positive and acceptive, not coercive and exhorting. A poor report is taken as an indication of need for help, not punishment.
3. Parents give time, thought, and effort, not material things.
4. Parents listen to and accept the child's early ideas and ambitions and do not foist theirs upon him.
5. Parents present the group as a place to go to play, to do things with others, and to make friends.
6. Parents and siblings are helpful.
7. Parents and siblings do things *with* him as well as for him.
8. Parents assign physical jobs with balky objects involving lifting and carrying. This makes the child feel healthy and strong.
9. Playful companionship with parent.
10. Story telling by parent.
11. Parents laugh and joke with the child.
12. The seniority of older brothers and sisters is recognized and respected by parent.
13. Father and mother live in the home and do things together.

What traits a good parent should have has been studied by Sowers (1937) by examining the essays written by children on the characteristics of an ideal parent. In Table LXXIX are given the characteristics that they think most important.

TABLE LXXIX. CHARACTERISTICS OF "IDEAL" PARENT

Characteristic	Percentage
Parents should take interest in home and children	40
Parents should keep in children's confidence so that they feel able to talk over all troubles and problems	16
Parents should show interest in children's schoolwork and other activities	10
Parents should permit children independence of thought and action	9
Parents should respect children's individuality	7
Parents should be cordial and friendly to the children's friends	7
Parents should praise and encourage children but never ridicule them	6
Parents should try to see children's point of view	6
Parents should make home pleasant, please children, and make them happy	5
Parents should have confidence in children and make them feel they are trusted	4
Parents should inspire the love, not fear, of their children	3
Parents should provide amusement for children	2
Parents should not recall the days when they were "young"	1

Source: SOWERS, A. Parent-child relationships from the child's point of view. *J. exp. Educ.*, 1937, **6**, abbreviated from p. 208. Used by permission.

CHILDREN'S PREFERENCE FOR PARENTS

Psychoanalysts explain the child's preference for one parent in terms of the Oedipus theory, that there is an innate, unconscious sexual desire

among sons for their mothers and among daughters for their fathers. If this were true, it would mean that the child's preferences are always for a parent of the opposite sex. This, in all the studies made to date, has not proved to be the case.

Stagner and Drought (1935) found no evidence of the influence of an Oedipus complex in children's attitude toward their parents. They did find, however, that the child's attitude toward his parent is determined not by parental treatment alone but also by the personality of the child. According to Meltzer (1941*a*), the distribution of labor between parents in our present economic situation is largely responsible for the differences in parental preferences between the sexes.

Nimkoff (1942) has explained parental preferences in terms of restrictive discipline and companionship. According to him, "that parent will be preferred who offers more in the way of companionship and exacts less in the way of discipline." Because fathers in our society are expected to administer more serious punishment and because they can offer less in companionship, the mother has a great advantage. The child's preference for one parent is not, Nimkoff has emphasized, in terms of any inherent factor but is the result of the prevailing culture.

Nimkoff has pointed out, further, that mothers are far more intimate than fathers with both their sons and their daughters. They secure a more complete and willing obedience from children of both sexes, they have a fuller confidence of their children, and they enjoy a more regular and frequent companionship with their children at recreational affairs. With fathers, daughters are more obedient and companionable than are sons, while sons are more confidential.

"Social distance" between parents and children has been studied by DuVall (1937) through the use of a questionnaire. The results indicated that girls were closer to their parents than boys, though girls were closer to their fathers and boys to their mothers. Social distance, DuVall noted, was correlated with age. The younger children questioned showed greater nearness to each of their parents than did the older.

Preferences for Mother. Children of different ages, it has been found, agree almost unanimously on the fact that they prefer their mothers to their fathers. Mott (1937) asked six-year-olds which parent they preferred and found it was the mother, though a larger percentage of the girls placed their fathers first than did the boys. Simpson (1935) found among children five to nine years old an overwhelming mother preference. The only exception was in the case of the five-year-old girls, 60 per cent of whom said they preferred the father. From the age of six to nine, there was a tendency for the father preference to decline, the most pronounced drop occurring in the case of girls of about six years of age. Simpson's findings are illustrated in Fig. 87.

In questioning children five to twelve years of age, Jersild *et al.* (1933) reported that children of both sexes showed more consideration for their mothers than for their fathers; that they were more concerned about the mother's than the father's welfare; that the "best happenings" they could recall were connected with their mothers, while the "worst happenings" they mentioned related to a separation from the mother.

According to Yarnelle (1932), boys prefer their mothers, regardless of her attitude toward them, though the preference is less marked when the

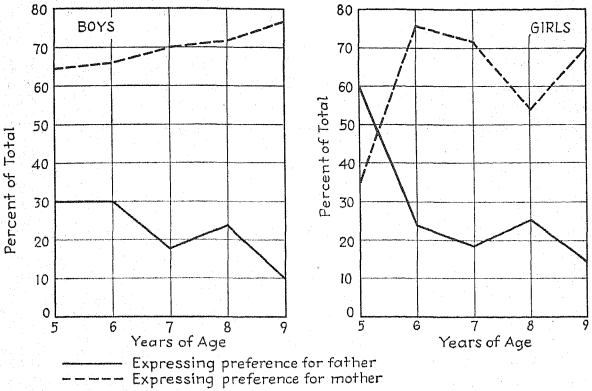

FIG. 87. Father-mother preferences of boys and girls grouped according to age. (*From M. Simpson, Parent preferences of young children.* New York: *Teachers College Bureau of Publications*, 1935, *p.* 26. *Used by permission.*)

mother shows an attitude of rejection. The girls, Yarnelle noted, tended to prefer the parent who preferred or overprotected them and to prefer the parent who played the dominating role in the family.

Reasons for Children's Preferences. Back of all preferences is a reason. The child does not just happen to prefer one parent to another. In his mind, the preferred parent has an advantage over the other parent and that advantage is generally in favor of the child. In other words, the child prefers the parent who, in one way or another, means more to him than does the parent who is not preferred. While many attempts have been made to explain children's preferences for parents from the point of view of an adult or from observations of the child's behavior, relatively few attempts have been made to explain these preferences by asking the children to give their reasons for the preferences. Because

the studies along this line have been few, the two reported below are of special interest.

When fifth- and sixth-grade children were questioned by Gardner (1947) about their preferences for one parent and their reasons for the preference, the following facts were brought out. Thirty-five per cent of the children said that they felt their mothers understood them better, as contrasted with 9 per cent who thought their fathers did; 13 per cent thought the father was easier to get along with, as compared with 34 per cent whose preference for the mother was based on their belief that the

TABLE LXXX. PERCENTAGE OF VARIOUS REASONS GIVEN BY CHILDREN FOR PREFERENCE OF FATHER OR MOTHER

Reason	Percentage of reasons for preferring			
	Father		Mother	
	Boys	Girls	Boys	Girls
No corporal punishment	25.0	23.6	26.2	21.8
Supplies material wants	46.4	49.1	46.9	55.6
Gratifies emotional wants	25.0	21.8	23.4	14.5
Inherent in parenthood	1.8	1.8	2.1	1.6
Sex solidarity	1.8	0.0	0.0	3.2
Miscellaneous	0.0	3.6	1.4	3.2

SOURCE: SIMPSON, M. *Parent preferences of young children.* New York: Teachers College Bureau of Publications, Columbia University, 1935, p. 65. Used by permission.

mother was easier to get along with; and 58 per cent regarded the father as the bigger "boss," as compared with only 25 per cent who looked upon the mother as the "boss." When services are required of parents, the father is preferred for broken toys and need for money; the mother, for help in cases of illness, trouble in school, loss of something, or hurt feelings.

When asked by Simpson (1935) why they preferred one parent, the children gave a number of reasons, the most important of which are summarized in Table LXXX.

The data presented above show that about one-fourth of the reasons given for the preference of the mother by both boys and girls is "no corporal punishment" and about one-half say, "supplies material wants." According to Simpson's findings, about 87 per cent of the fathers of the children she studied go out to work and most of the mothers stay at home. Constant association with the mother may be a potent factor in building up the mother preference, she explained. Furthermore, Simpson noted, when boys and girls reach six years of age, the behavior of the fathers of the group seemed to change. They played less with the

children, punished them more, and gave gifts to them less frequently. The decline of the father's popularity, Simpson explained, which occurs at about the same time, may possibly be ascribed to the changes in the fathers' conduct.

Influence of Order of Birth. Because it is quite usual for the first-born child, especially if that child be a boy, to become the favorite of both parents, it would be quite understandable if the first-born, in turn, reciprocated by favoring the parent who showed the greater interest in and affection for him. DuVall (1937), in studying social distance between parents and children, noted that birth order was not an important factor. Among the underprivileged children, the first-born was

TABLE LXXXI. PARENTAL PREFERENCES
(in per cent)

Preference	Father	Mother	None
Only	7.2	46.4	46.4
Youngest	7.7	15.4	76.9
Oldest	12.8	35.9	51.3
Middle	0.0	8.3	91.7

Source: ROBERTS, C. S. Ordinal position and its relationship to some aspects of personality. *J. genet. Psychol.*, 1938, **53**, 205. Used by permission.

closest to the parents, while among those of average socioeconomic status, it was the youngest.

When Roberts (1938) asked sixth-grade boys and girls to express a parental preference, if any, he found wide differences in preference among children of different ordinal positions in the family. These preferences are summarized in Table LXXXI.

Among the only children, 46.4 per cent of the children have no parental preference, as contrasted with 91.7 per cent of the middle children. Maternal preference was expressed by only 8.3 per cent of the middle and 15.4 per cent of the youngest, as compared with 35.9 per cent of the oldest and 46.4 per cent of the only. Paternal preference, on the other hand, was expressed by 12.8 per cent of the oldest, 7.2 and 7.7 per cent, respectively, of the only and the youngest, and not at all by the middle group.

Age and Parental Preferences. Young children, it is commonly recognized, prefer the companionship of their parents to that of other children or even that of other adults. When, however, the question is raised, "Which is the favorite parent, the mother or the father?" the usual answer is "The mother." Whether this holds true for children of all ages or only for those of the preschool years, is a question that has received little attention.

CHAPTER XV

PERSONALITY

The term "personality" comes from the Latin word "persona," a mask that was worn by an actor while speaking or performing on the stage. The wearer of the mask revealed himself through his speech and his actions. Personality now has somewhat the same import. What a person is, how he thinks and feels, and what is included in his whole psychological make-up are, to a great extent, revealed through his behavior and his speech. Personality, then, is not one definite, specific attribute. It is, rather, the "quality of the individual's total behavior" (Woodworth, 1947). As Dashiell (1937) has pointed out, "a man's personality is the total picture of his organized behavior, especially as it can be characterized by his fellow men in a consistent way."

Personality Pattern. The individual's personality is made up of "traits," or specific qualities of behavior. The personality make-up does not consist, however, merely of a sum of traits but rather of traits that are organized and integrated into a pattern. Because of this, it is highly unlikely that any two individuals, even identical twins, would have personality patterns identical in make-up.

The recognition of individual differences in personality patterns goes back at least as far as the Greeks. Hippocrates referred to four different personality "types," each with its own characteristics. Persons who manifested these characteristics were classified as the *sanguine*, quick and active persons; the *choleric*, or strong and easily aroused persons; the *phlegmatic*, or those of a slow and stolid type; and the *melancholic*, or sad and pessimistic individuals.

Today there is fairly wide acceptance of the belief that individuals cannot be classified into "types," because of the differences that exist as a result of the make-up of their personality patterns; and increasing emphasis is placed on the importance of these individual differences in personality. This stresses the fact that a child cannot be fitted into a socially acceptable mold and turned out with a personality pattern of a type to suit the ambitions of the parents.

Personality Attributes. Personality has, according to Shirley (1933*a*), four major attributes: (1) *all-pervasiveness*, which includes the physical, intellectual, social, and emotional traits; (2) *pattern*, or an organized unit

In answer to the question, Can a newborn be said to have a personality? Stagner (1948) answered with an emphatic Yes. Though the distinction between self and the environment is probably sharply defined much later, Stagner believes there is definite indication of personality at birth. Like Zachry, he has emphasized that, from birth onward, individual differences in personality begin to be noticeable, as is manifested by variations in crying, smiling, motor activity, and differential responses

FIG. 88. The early years are vitally important in personality development. (*The Centaur Company.*)

to the presence of adults. From these variations is built up a pattern of personality from which the individual never completely escapes.

From a study of 25 babies during the first two years of life, Shirley (1933*a*) concluded that "traits are constant enough to make it plausible that a nucleus of personality exists at birth and that this nucleus persists and grows and determines to a certain degree the relative importance of the various traits." Bayley (1940) noted that all 61 babies studied over a period of time showed a distinct personality from the start of the study.

Early Changes. During the early months of life, growth and development bring about personality changes in the baby. Environmental influences at this early age are less important than they will later be, though they cannot be said to be ineffectual. The major cause of the changes

that occur is maturation. This point of view is stressed by Aldrich (1947), who holds that "under normal conditions the forces of growth cause a most radical and gratifying change in personality to occur during the first 3 months of life. The compulsion and fear characteristic of the automatic, newborn stage gradually melt away until, during the third month, the baby blossoms into a smiling, cooing, pleasantly responsive individual."

As the baby grows older, his muscular development makes more complex voluntary activity possible and this opens up new channels for personality to express itself. Should the environment obstruct the normal use of his emerging ability, Aldrich stressed, the baby will oppose those who put pressure on him. As a result, he becomes antagonistic and rebellious. An environment which fosters the development of his personality will, on the other hand, make him cooperative and responsive. And because the forces of growth are unchangeable, any adjustment in favor of producing a more desirable personality must come from the environment.

Individuality in Personality. Everyone who has studied the personalities of very young babies has agreed that individual differences are apparent at a very early age. According to Rand, Sweeny, and Vincent (1942), "children do seem to lean toward stability or instability very early in life." The dominatingly stable baby is what is generally referred to as the "good baby," who doesn't cry easily, takes the breast easily, sleeps soundly, is not easily upset by changes in food or temperature. As a result, he develops into a steady-going, adaptable, and usually happy individual. The unstable, or "troublesome," baby is just the opposite.

As babies grow older, the combined influences of heredity and environment help to produce even more marked differences in their personalities. Bühler (1935) has pointed out that various personality "types" can be distinguished from the beginning of the child's school career. Some children, she notes, are leaders, who have sufficient initiative and talent to make suggestions and attract followers. Some are helpers, who can look out for other children; some are maternal and care for their weaker and more helpless neighbors; some are despotic and tyrannize over others; some like to joke and make fun of others; some constantly show off; some are much-loved favorites, while some are solitary and become school failures.

Using the Rorschach method of personality diagnosis, Klopfer (1939) maintains that sex differences in personality are apparent as early as three years of age. Girls, he reported, show reactions to external emotional stimuli at an earlier age than do boys, and they begin earlier to adjust their reactions to emotional situations than do boys.

PERSISTENCE OF PERSONALITY TRAITS

A very important question from the practical, as well as the theoretical, angle is whether or not different personality traits remain relatively unchanged from year to year as the child grows older. Desirable personality traits should not, it is obvious, be changed if that can be avoided. But, in the case of socially unacceptable traits, such as stinginess, cowardliness, and dishonesty, the more radically they can be changed, the better for the possessor of these traits.

In order to determine how persistent or nonpersistent certain personality traits are, genetic studies over a period of time have been made. The measures of different traits are then compared with earlier measures, to see what, if any, change has taken place.

Persistence of personality traits does not mean that no change occurs. It does mean, however, that there is a tendency for certain traits to remain in an unchanged, or relatively unchanged, form even in instances where training and social pressure have been operative. As Allport (1937) has stressed, the "important fact about personality is its relatively enduring and unique organization."

A child who, as an infant, showed irritability would show the same trait as he grew older, even though his irritability were somewhat modified and toned down as a result of environmental pressures. Likewise, a happy, good-natured child would remain cheerful, even in the face of adversity, if persistence were characteristic of different traits.

"Center of Gravity." Breckenridge and Vincent (1943) maintain that, while certain personality traits change as the child passes through certain kinds of experiences, "each personality preserves a central stability, a central core or focus or 'center of gravity' which does not change." This, they hold, lends stability to the personality, in that it preserves a balance of traits within each personality pattern. The "center of gravity" is made up of habits and attitudes which are fixed early in life. Once it is fixed, it does not change unless radical steps are taken to produce such a change.

An individual who, as a young child, was subjected to environmental influences which tended to undermine his self-confidence develops an "inferiority complex" made up of memories of unpleasant experiences in which he was inferior or believed himself to be inferior to other children. Unless constructive steps are taken to eradicate the beliefs that make up the core of this complex, the child will grow up with a marked feeling of inferiority, accompanied by a strong desire to withdraw from any or all social situations in which he might feel inferior.

Getting rid of this set of habits and attitudes which predispose him to

retreat from social situations and to develop a shy, introverted personality cannot be accomplished easily. It will unquestionably require professional treatment from a psychoanalyist and a long period of time to reorganize his whole concept of self. Even though his personality may be modified so that he will be a socially better adjusted individual, it is questionable whether marked changes can be produced if the individual has passed beyond the early adolescent years.

In young children, the "core" of personality, or "center of gravity," is not well established. It can, therefore, be changed without disturbing the total personality balance. But, as Breckenridge and Vincent have pointed out, the personality becomes less flexible as the individual grows older, because of the larger and more fixed "core" of habits and attitudes. Even though a change can be achieved, it will require more effort and pressure. Furthermore, care will have to be taken to avoid disturbing the personality balance—a problem that is not so likely to arise in younger children, in whom the personality pattern is less well fixed.

Experimental Evidence of Persistence. Mention of persistence of personality traits can be traced back to the early baby biographies. Woolley's (1925) description of Agnes during the ages from two to five years showed her to be a consistently aggressive child during that period. Shinn's (1900, 1909) study of her niece likewise referred to persistence of personality traits.

Trait measurements of groups of children have revealed that, while traits vary from year to year within a narrow range, they remain fairly consistent over a period of time. Stutsman (1935) rated the personalities of a group of children over a period of 3 years with as many as eight or nine consecutive ratings for the children. She found that the profiles made from these ratings were, in many cases, consistently uniform in pattern.

Fries (1937) and Fries and Lewi (1938) followed the development of 47 children, from six weeks of age to middle childhood. Evidence obtained from this study led them to believe that, because of the persistence of personality traits, it is possible to formulate a prognosis of the child's future personality at the end of the lying-in period. Allport (1937), in a study of his own son, found the prognosis of his personality at the age of four months was borne out when the child was two years old.

McGraw's (1939) study of Jimmy and Johnny showed persistent temperamental differences between the twins over a period of time. In sympathetic responses, Murphy (1937) noted a high degree of internal consistency. Gesell *et al.* (1939) report a study of the analysis of 15 behavior traits made during the first year of life and again when the children were five years old. Of the 75 comparative judgments made on

the different traits, 48 rank assignments coincided; 21 showed a displacement to the extent of only one rank order; five, a displacement of two, and one, a displacement of three orders. This, Gesell stressed, shows the prophetic character of the first year's behavior traits.

Another study which shows the slight shifts in personality ranking was made by Driscoll (1933). Driscoll compared the personality-adjustment scores of nursery-school children with scores obtained after they were five years old. She noted that 46 per cent of the children remained at the level at which they had been classed while attending nursery school, 50 per cent shifted from one level to the one immediately above or below, and only 4 per cent changed as much as two levels in the classification.

McKinnon (1942) studied change and persistence in personality characteristics of 16 children over a 5- to 6-year period, beginning when the children were in nursery school. She found that 10 of the 16 children continued to show the dominant personality characteristics that were present at the beginning of the study. Withdrawing behavior was found to be least likely to change, while conforming behavior increased with age.

The predominant modes of behavior which persist become less conspicuous with age. Modification of behavior, McKinnon stressed, is a gradual process of development. No children remained absolutely constant with respect to predominant forms of behavior, nor were there any revolutionary changes. Shift, however, was always in the direction of a form of behavior that had been evident, but it was less pronounced at an earlier age.

"Shirley's Babies." One of the most interesting and most extensive studies of persistence in personality traits was made on a group of 25 babies, first by Shirley (1933*a*) and later by Neilon (1948). During the 2-year period when the babies were under constant observation and study, Shirley noted a good deal of consistency. The babies, for example, showed a decrease in irritability as they grew older. One of the babies remained consistently the most irritable of the whole group and another, consistently the least irritable, as time went on. Modifications in their behavior likewise were noted. A baby who is fearful and screams at one year is fearful at two, but the screaming is replaced by running away.

Fifteen and a half years after Shirley made her study, Neilon (1948) matched objective measurements of personality and new personality sketches for 15 of the original 25 "Shirley babies" with the original sketches written by Shirley. The matchings were found to be easier for some of the children than for others. There was definite evidence, however, that personality similarities had persisted over this period of time and that some of the individuals were readily identifiable because of the uniqueness of their personality patterns.

Persistence into Adult Years. With puberty changes, there have been found to be changes in the individual's personality. How marked or how slight these changes are has not yet been definitely decided. Several studies have been made of personality ratings of college students, as compared with ratings at earlier ages, which throw light on this problem.

Stagner (1948) compared the present personality status of college students with their memories of themselves at an earlier age and found personality traits to be fairly consistent. For example, individuals who were emotional in childhood (had feelings hurt, lost temper, feared animals, and had nightmares) scored high on emotional instability as adolescents. Children who were shy scored high, as adolescents, for seclusiveness. The bossy child later scored high on self-esteem, while the child who was bullied by others rated low on this trait in adolescence. On the basis of these findings, Stagner concluded, "Man shows a surprising tendency to maintain an established trait pattern. Consistency rather than change is the rule."

In an analysis of the records of 25 women, Roberts and Fleming (1943) were able to study the persistence and change in personality patterns in precollege, college, and postcollege periods for these women. For the group as a whole, they reported that the percentage of persisting and fluctuating traits was in the ratio of 3 to 2. Sixteen of the women showed more, six showed an equal amount, and three showed less persistence than fluctuation.

A study of the records of patients in mental hospitals was made by Birren (1944), to see how they compared with records from child guidance clinics for these same individuals. The children who later became schizophrenic tended to be apathetic in childhood, Birren found; while those who were excitable had been excitable during childhood. Birren contended that his findings support the view that "personality characteristics of psychotic patients are stable and evidence continuous development from childhood."

CHANGES IN PERSONALITY TRAITS

In spite of the fact that personality patterns remain relatively constant, there is definite evidence that changes can and do occur. These changes are more frequent and more pronounced in very young children than they are in children of school or college age. The changes are, for the most part, brought about by environmental influences, primarily the pressure of social approval or disapproval.

Certain aspects of personality, Bayley (1940) observed, did change according to a fairly consistent pattern in the 61 children she studied. For example, a child who was difficult to work with in a testing situation

at one stage might be easily handled at another. A happy, contented little child might develop into a sullen older one. This, Bayley pointed out, shows that personalities change as children grow older. These changes are brought about partly through the child's advancing maturity and partly through his experience and the environment in which he lives.

Causes of Changes in Personality. There is no one cause that is necessarily responsible for personality changes in the normal child. In instances when there are structural disturbances to the brain, as in the case of a brain tumor, changed personality can generally be traced directly to that one factor. But, in cases of normal children, evidence points to the interaction of two or more causes that are responsible for producing changed personalities.

Fenton (1943) has classified the causes of change in personality into three major categories. These he lists as follows:

1. *Bodily or organic factors*, as food, drugs, infections, organic disorders, physical maturation and decline.
2. *Factors of the social and cultural environment*, as education, recreation, social participation, etc.
3. *Factors within the individual himself*, as emotional pressures, identification with people or causes, and imitation.

Experimental Studies of Personality Change. There have been several experimental studies of personality changes which have been brought about by control of the child's environment and direct instruction in the development of desired traits. These studies, it should be emphasized, have been made on very young children. Up to the present time, there are no reports of similar studies carried out on older children or on adolescents.

To demonstrate experimentally how a socially desirable personality trait may be strengthened through training, Jack (1934) mapped out a program of training young children in such a way as to increase their self-confidence. Nonascendant, or easily dominated, children, Jack found, differed primarily from ascendant children in the degree of self-confidence they felt. The training of the nonascendant children was in three things that the ascendant children did not know—as assembling a mosaic of blocks and learning to know a storybook.

After a period of sufficient training to give the nonascendant children a feeling of self-confidence from their newly acquired skills, they were paired with ascendant children. Jack found not only that there were marked increases in their ascendancy scores but also that they attempted to dominate the ascendant children. They showed a greater interest in directing the activities of other children and in maintaining their own property rights.

Two years later, Page (1936) reported the results of a study in which a technique similar to Jack's was used. She found, as Jack had, that ascendancy behavior can be increased by training but, even more significantly, that the effects of training are *cumulative*. This means, Page explained, that when a child increases his self-confidence in one or more skills, he can be encouraged to try others and, in that way, to develop more ascendant behavior. It is thus apparent that it is important for children to develop skills that will give them prestige with other children if they wish to increase their self-confidence.

How a socially undesirable personality trait can be weakened or eliminated has been demonstrated experimentally by Updegraff and Keister (1937), who showed how children's reactions to failure can be changed favorably. Children who showed immature reactions to failure, such as "giving up," asking for help more than half the time, destructive behavior, and rationalization, were selected by Updegraff and Keister for experimental training. These children were given tasks graded in difficulty, so that it was possible for them to see their progress and to achieve success most of the time. After a period of training in which the children had far more successes than failures, Updegraff and Keister found marked improvement, as shown by the fact that the children stopped crying and sulking, showed greater interest and effort in their tasks, and depended less on adults; besides, the violent emotional behavior characteristic of children who have experienced too many failures disappeared.

Cautions in Personality Changes. In spite of the experimentally demonstrated changes that can be produced in personality traits, it is most important to bear in mind that the changes were brought about only in cases of very young children, before the personality patterns had become well established. Furthermore, how permanent these changes were, and whether they carried over to everyday life situations, has not been reported.

Of equal importance is the caution of not attempting to fit a child into a pattern to suit some adult ideal. Changing one or two personality traits that are proving to be a distinct social handicap to the child is one thing; but trying to revamp the entire personality pattern is an entirely different story. This would not take into consideration hereditary factors or the seriousness of attempting to bring about radical changes in a whole pattern without professional guidance and aid.

ADMIRED PERSONALITY TRAITS

At all ages, there are certain personality traits that are admired while others are frowned upon. There is, however, no constant standard of

what is admired. In a young child, certain traits may be regarded as acceptable, although those same traits during adolescence would be scorned, because in the adolescent's mind they are associated with children. Similarly, traits that are admired by children may not be admired by adults, and vice versa. The childish personality that conforms to adult standards so closely that the child is looked upon as a "perfect little gentleman" or a "perfect little lady" is likely to be labeled by children as the make-up of a "sissy."

Young children, in the preschool years, are more anxious to have the approval of adults than of their peers. For that reason, they strive to develop personality traits that will win for them the adult recognition and approval that they crave. But, as they enter school and become group-conscious, they are far more interested in winning the approval of their peers than they are of being admired by adults. As a result, the standards of socially approved personality traits change and the child now attempts to develop those traits which his playmates will respect.

Adult Standards. A desirable personality, as characterized by adults, will include traits which are admired by adults and which will make the child's adjustment to the adult world successful. As Thorpe (1946) has emphasized, the desirable personality is characterized by "emotional stability, social maturity, and a disposition to attack problems with confidence." This is a lofty standard, unlikely to be achieved by children or even by many adults.

Thorpe, elaborating on his concept of a desirable personality in children, has listed the following traits of behavior which go to make up this desirable personality:

1. Participation in wholesome physical activities.
2. Good health, abundance of energy, and regular sleep.
3. Participation in such cooperative activities as musical organizations, school clubs, etc., rather than spending spare time in sedentary pastimes of reading or listening to the radio.
4. Membership in some character-building organization, as Girl Scouts or Boy Scouts, Sunday school, or church.
5. Respect for associates and use of sincere social skills (such as being pleasant to new acquaintances, avoiding unnecessary criticisms, and being considerate of people's feelings) in dealing with them.
6. Spontaneous association with members of either sex, versus avoidance or dislike of members of the other sex.
7. Willingness to do work of different kinds (selling papers, doing chores, or performing housework) and being careful in the expenditure of money.
8. Subordination of immediate satisfaction in favor of more distant worth-while goals.

(Summarized from pp. 665–666)

A somewhat similar classification of desirable personality traits that a "highly socially proficient individual" should strive to develop has been

given by Jackson (1940). Once again, it will be apparent that many of the desired qualities are too mature to be attained by children. Jackson's list includes these:

1. The ability to take people as they are and to appreciate them for their work.
2. Inflating the ego of others and making them feel important.
3. Being considerate of others.
4. Being adaptable to changing circumstances.
5. Being careful of personal appearance.
6. Displaying good manners.
7. Having a normal degree of functional intelligence.
8. Having a normal amount of emotional maturity.
9. Being able and willing to assume leadership when group consensus calls for such leadership.
10. Possessing a high character without attitudes of reform and holiness.
11. Having certain similarities to the group as a whole.

As may be seen from the two sample lists of adult standards of socially desirable personality patterns given above, most of these traits are far too mature to be attained by a child, even as he approaches adolescence. Because adults, typically, set adult standards for children to attain, they are disappointed when the child fails to attain the standards they admire and expect. As a result, they frequently label as "problem" behavior what is perfectly normal for the child's level of development, and they even go so far as to wonder whether the child is developing some personality quirk which in time might develop into a psychopathic case.

Children's Standards. Studies of children's friends, child leaders, and social acceptability among children (see pages 318–333) have revealed very conclusively that children have definite standards of what they like or dislike in other children. When a child possesses some of the desired personality traits, he will be popular and have a fairly wide circle of friends. If he possesses admired personality traits in a more highly developed form than his peers do, his chances of being recognized as their leader are good. But should he possess traits which are disliked, even though he may also possess some admired traits, it is very likely that he will find himself in the position of a social isolate (see pages 333–336).

As Bonney (1942) has pointed out from a careful analysis of children who are popular with their peers, people are "liked or disliked not on the basis of one or two or a half dozen traits but on the basis of the impression they make as total individuals. . . . Each individual is a unique whole and is judged by the total impression he makes. He is not judged on a part-by-part or trait-by-trait basis."

This, of course, means that it is possible and common for a child to have certain socially unacceptable traits and still be popular, while unpopular children may have some highly desirable traits. It depends

primarily upon which are the stronger, the desirable or the undesirable, and which stand out more forciblity in the personality pattern. Bonney has emphasized this point further when he called attention to the fact that among the very popular children are some extremely unfavorable personality traits, such as being dominating or bossy, being a show-off and striving for attention, being effeminate in the case of a boy, being babyish, fighting, pouting, and dishonesty.

In an analysis of the personality traits of popular and unpopular children in fourth-grade classes, Bonney (1943) compared the ratings in 20 personal traits received by children in the highest and lowest quartiles on the basis of social acceptance. The results are summarized in Table LXXXII.

TABLE LXXXII. AVERAGE COMPOSITE RATINGS IN TWENTY PERSONAL TRAITS RECEIVED BY CHILDREN IN THE HIGHEST AND LOWEST QUARTILES ON THE BASIS OF SOCIAL ACCEPTANCE

Social acceptance quartiles	Quiet	Talkative	Attention-getting	Bossy	Tidy	Fights	Daring	Leader	Active in games	Sense of humor	Friendly	Welcomed	Good-looking	Enthusiastic	Happy	Laughter—jokes	At ease with adults	Active in recitations	Grown up	Older friends
4 N = 20	3.1	3.4	2.7	2.4	4.6	2.5	3.8	3.9	4.1	4.0	4.5	4.6	4.4	4.5	4.7	4.1	4.4	4.6	3.3	3.6
1 N = 20	2.8	2.7	2.2	1.8	3.7	2.3	3.2	2.3	3.7	3.6	3.6	3.4	2.9	3.5	3.6	3.2	3.1	2.9	3.1	3.4
C.R.*	1	2	1.7	2	3.6	.6	2	5	1.3	1.5	3.6	4.5	7	4	5	3.5	4.5	5	2	.8

* Critical ratios were obtained from the differences between the means of the upper and lower groups divided by the standard error of these differences.

Source: BONNEY, M. E. Personality traits of socially successful and socially unsuccessful children. *J. educ. Psychol.*, 1943, **34**, 455. Used by permission.

From an analysis of the critical ratios in the lowest line of the table, it is apparent that the upper fourth in social acceptance is reliably superior to the lower fourth in the following 10 traits: tidy, leadership, friendly, welcomed, good-looking, enthusiastic, happy, frequent laughter, at ease with adults, and active in recitations. Commenting on his findings, Bonney states:

One fact that emerges is that the most popular children are more aggressive and overt in their responses. . . . Apparently the highest social recognition does not generally go to children who are submissive, or docile, or who are charac-

terized chiefly by negative virtues. . . . This is another score against certain traditional moral teachings which over-emphasize obedience and conformity. . . . Under fairly typical life situations, such as a public school, it is safe to say that any individual is popular far more because of what he does, than because of what he refrains from doing. . . . In other words, the data of this study support the thesis that popularity is more tied up with marked abilities and strong personality traits than with negative virtues (pp. 456–457).

Sex Differences in Admired Traits. From the time children begin to play with members of their own sex, they form standards of what a boy or a girl should be. Traits that are greatly admired in a boy would not be admired in a girl either by boys or by girls. A boy who is sympathetic, kind, and thoughtful is admired by adults, but both boys and girls look upon him as a "sissy." The very traits that they condemn in him, however, are admired in girls, not only by other girls but also by boys. Similarly, an aggressive girl is labeled as "bossy" by other children, but an aggressive boy is admired and is likely to assume the role of leadership.

To see just what sex differences exist in personality traits of popular boys and girls, Bonney (1944*a*) gave the California Test of Personality to fourth-grade children. On the whole, he found, sex differences in social success and personal traits were not large, though there was a high degree of consistency in favor of girls on both kinds of measures. Boys were found to be more restless and more eager to fight than girls, and this was true for the popular boys as well as for those who were less popular. Girls, on the other hand, were rated as being superior to the boys in good looks, tidiness, and being more grown-up. They were also rated higher than the boys in "social skills."

Changes with Age. As children grow older, their ideals change. Personality traits which are admired in little children are now regarded as "babyish," and new traits take their place in the favor of the group. No longer is the submissive, quiet, docile child admired when he begins to play with a group of children of his own age. He must develop traits of a more aggressive sort if he wants the approval of his playmates. This frequently means the development of personality traits which are not admired by adults or even are condemned by them.

With the onset of puberty and the psychological changes which accompany the physical changes occurring at that time, new standards of admired personality traits appear. Tryon (1939), in a study in which she had preadolescent and early adolescent boys and girls rate their classmates, reported that, during the period from twelve to fifteen years, admired traits underwent some revolutionary changes for girls while those for boys were only slightly changed.

For twelve-year-old girls, a personality pattern that conforms to adults' standards is admired. The girl who is quiet, sedate, and nonaggressive fits into this pattern. By the age of fifteen, however, the standard has changed and the approved personality pattern is one in which extroversion, good sportsmanship, activity, ability to organize games and parties, and being glamorous and fascinating are greatly admired by other girls. The personality pattern of an admired twelve-year-old boy is that of one who is skillful, a leader in games, daring, fearless, and defiant of adult demands and regulations. The only real change that has occurred by the time the boys reach the age of fifteen years is that defiance of adult authority is regarded as immature.

FACTORS IN PERSONALITY

How much or how little influence different factors will have on the personality development of the child will depend to a large extent upon the child's ability to understand the significance of these factors in relation to himself. His concept of self is influenced by his comprehension of the attitude of the social group toward him. Should, for example, his appearance be such that he is admired by others for it, appearance would be a favorable factor in his personality development. But, if he is aware of the fact that his peers do not admire his looks, and that they have given him a nickname, such as "Fat Potato," which shows how they feel about his appearance, this factor will prove to be a liability in the personality pattern.

Physique

The child's body build and his personal attractiveness are either admired or disapproved of by others. The child's awareness of how people feel about his looks, his body build, and the general state of his health all influence his attitude toward self, which, in turn, is reflected in the quality of his behavior. The effect of physique is thus indirect, rather than direct.

Size. Children at an early age become conscious of size as a differentiating factor in social relationships. The tall child has an advantage over the short one of the same age. The shorter the child in comparison with the group, the more detrimental it is to his social status. The reason, of course, is that children associate age with size. They think of a short child as a young one and, because social relationships are established on the basis of age, the short child is likely to be excluded from the group. Unless one is very tall, tallness is an advantage, because it is associated with superior age and strength in the minds of children.

Excessive thinness or excessive fatness are also disadvantages in social relationships. Children are hypercritical of others who deviate markedly

from the norm in width, as well as in length. The child who falls short of the approved standards in size is conspicuous and is usually regarded unfavorably by his classmates. Bayley (1940) found few relationships between body build and personality. Not all chunky children, for example, were phlegmatic and placid, nor were all thin children nervous and excitable. How thinness and fatness affect a child's behavior will be influenced by the way his peers react to him.

Obesity. A good illustration of the way in which the social group reacts to a child whose size deviates from the socially approved pattern and the effect it has, in turn, on the child's attitude toward self and his subsequent behavior is seen in the case of excessively fat, or obese, children. Popular opinion holds that fat people are cheerful, easy to get along with, easy going, and that they enjoy life in general. Studies of obese children have shown that "fatties" are fundamentally unhappy and maladjusted children. They are likely to be timid, retiring, clumsy, slow, awkward, and incapable of holding a secure status among their peers.

Furthermore, because they are oversensitive and unable to defend themselves, they are often at the mercy of more active children who enjoy teasing and bullying them. And, since their overweight condition makes it impossible for them to engage in active play with other children, they become increasingly unsocial.

A personality analysis of obese children by Bruch (1941) revealed overt expressions of immaturity, the most important of which was continued dependence on the mother, even at an advanced age, for the simplest services of physical care and for the satisfaction of emotional needs. This resulted in a delay in acquiring the usual muscular skills, which led Bruch to conclude that obesity in children is a "disturbance in the maturation of the total personality and a somatic compensation for thwarted creative drives."

When Bruch analyzed the family conditions of obese children, she found than many fathers of these children were weak and unaggressive, having little drive and ambition. Because of this, they could not give their children positive guidance or counteract the overindulgence of the mothers. In most cases, the mothers dominated the families. Because of their own maladjusted personalities, the mothers overprotected and overemphasized feeding. Bad home influences, Bruch stressed, produce factors that retard the personality development of the child and obesity is a direct result of these influences.

Physical Condition

The health of the child not only influences the child's behavior at the moment but it has long-term effects on his personality. A child who is

delicate and sickly comes to expect the consideration from others that he has been used to at home. He resents not being coddled by outsiders as he has been coddled at home. He develops timidity, which is reflected in everything he does. This timidity comes from the belief that he is not so strong as other children and that he might hurt himself or become sick if he attempted to do what other children do. Because of this timidity, he withdraws from the activities of the other children and becomes overdependent on his parents.

Good health throughout childhood has a favorable influence on personality. The healthy child is able to do things without any parental restraints, he is not held back by fear that he will not be well enough to do what others do, and he feels superior to those whose health makes it impossible for them to keep up to the standards set by the group. The attitude of the family and the social group in general is so much more favorable toward a healthy child than toward a sickly one that it is certain to affect the quality of his behavior.

Macfarlane (1939) found that children who have hives, eczema, or any other irritating physical condition were more apt to develop tempers and overactive responses than were children free from such irritations. Shyness and somberness were more often observed among children of low energy levels.

The effect of allergies on the personality traits of children eight to sixteen years of age has been studied by Riess and de Cillis (1940), who measured personality traits of children suffering from allergies. They reported significant differences in each aspect of the test between the allergic and the control group. The allergic children were more ascendant, more extroverted, and more emotionally unstable than were those of the control group.

Allergy, these investigators commented, tends to be accompanied by personality constellations which differ markedly from those found in normal, nonallergic children. Children with skin allergies were found to be more ascendant and more emotionally unstable than those with vasomotor rhinitis, asthma, or mixed allergies.

Chemique

The condition of the endocrine glands, or the glands of internal secretion, affects the personality development of the child. A hyperthyroid condition, for example, makes the child nervous, excited, jumpy, restless, and overactive. The opposite, a hypothyroid state, in which there is a deficiency of secretion from the thyroid glands, causes the child to be lethargic, unresponsive, depressed, dissatisfied, and distrustful.

While there is not a large amount of evidence at the present time

regarding the specific effects of the different glands of the endocrine system on the personality of the child, there is a strong belief that these glands are of no small importance in the personality make-up of the child. With the physical changes which occur at puberty, there is a change in endocrine balance which is reflected in personality at that time.

Clothes

The influence of clothing on children and the interest children have in their clothes has already been discussed (see pages 509–513). There is no question that the child's clothes must be regarded as a factor of importance in his personality development. He is keenly aware of the attitude of others, primarily of his peers, toward his clothes. Not style alone but compliance with the style accepted by the group to which he belongs will be a factor of importance. This means that it is not sufficient for the child to be in style as far as current trends in fashion are concerned. What is most important is that his clothing must resemble that of the children with whom he has identified himself, even if their styles do not conform to the prevailing styles in the community. Having clothes that other children admire, envy, and imitate gives the child a feeling of importance, when he is recognized by his peers in this way. Feelings of inferiority, on the other hand, frequently develop in the child who is dressed in clothes which other children make fun of or which give him an appearance so markedly different from that of the group that he is self-conscious.

Relatively few children discover until they reach the age of adolescence that clothes are of value as a means of covering up physically unattractive traits or physical features which make one person different from others. A chubby little girl, for example, does not realize that a dress with ruffles and bows will merely accentuate her roundness. Only when this is pointed out to her by an adult does she become aware that the right kind of clothing can be used to reduce the effect of certain physical conditions which have been a source of disturbance to her.

As children approach adolescence, many develop new interests in clothes; so emphasis is placed on the value of the right clothes as a positive asset in personality development. This attitude, however, is not characteristic of younger children. For a young child, resemblance to his playmates is a matter of serious concern to him.

The Child's Name

Teagarden (1946) has pointed out that "The name that is given to a child at birth or shortly thereafter may constitute a psychological

hazard." This applies not only to the child's real name but also to any nickname or name of endearment that his parents or relatives may use.

When the child is old enough to play with other children, around the third year, he begins to realize the importance of his name. Names which lend themselves to distortions, names which are difficult to pronounce and are, therefore, frequently mispronounced, or names that other children criticize or make fun of are bound to lead to uncomfortable feelings on the part of the unfortunate who bears such a name. By contrast, the child whose name is admired feels self-important and this reacts favorably upon his concept of self.

Names That Are Handicaps. Allen *et al.* (1941), after analyzing first names, have listed those which prove to be disadvantageous to their bearers. According to these authors, names that are handicaps may be classed as follows:

1. Those which have come to be epithetical stereotypes either for unpleasant personal characteristics or for character traits frowned upon in society; for instance, Percy or names commonly applied to villians or other socially undesirable characters.
2. Names having certain almost invariable nicknames, which themselves carry the unpleasant connotations.
3. Names that become displeasing when combined with particular surnames.
4. Names that have been made unpleasant by personal or individual conditioning.

Nicknames. Most nicknames are verbal caricatures. They may come from an adaptation of the child's own name, but they almost always present a word picture of the individual. In a study of children's nicknames, Orgel and Tuckman (1935) have found that they fall into the following classifications: "pet" names, or names of endearment; nationality or place-of-birth nicknames, as "Yid" or "Dago"; names of animals, as "pig" or "cow"; distortion of the real name; nicknames from the individual's initials; nicknames from physical defects, as "Fatty" or "Skinny"; and nicknames based on personality defects, as "Sissy" or "Crybaby."

Most children dislike their nicknames and build up a feeling of resentment against those who use them, especially when they know that the nickname has been given as a way of making fun of the child. Too widespread use of the nickname on the part of the child's playmates may readily result in feelings of inferiority and resentment of so pronounced a form that the child will withdraw from the group and try to establish relationships with another group.

Cultural Pattern

Custom and tradition are of no slight significance in the personality development of the child. There are certain socially approved patterns

of behavior for both boys and girls in every culture, uncivilized as well as civilized. As Mead (1935) has pointed out, "sex traits" differ in different tribes, according to the cultural ideal of the tribe. Sometimes the women are aggressive and sometimes, submissive, depending upon the approved pattern of the tribe to which they belong.

Every civilized culture has its own definite patterns of the behavior that is approved for both boys and girls. Parents attempt, almost from the moment of the child's birth, to form the personality of the child so that it will conform to the approved pattern. Boys are supposed to be aggressive; girls, defensive. Boys are brave, but it is assumed that girls will cry when they are hurt. To be honest and trustworthy, sincere, sympathetic, and loyal is to possess personality traits that are approved for members of both sexes.

Throughout the early years of childhood, knowledge of the approved patterns of behavior motivates parents to direct the training of their children so that their personalities will develop according to these patterns. As children grow older, they too become conscious of the cultural patterns and strive to mold their own personalities in conformity with these. During the adolescent years, especially, the influence of ideals on the personality development of the individual is marked. A discussion of children's ideals is given on pages 500–503.

Interests and Hobbies

The child who has a large number of interests possesses, as a rule, a more extroverted personality than does the child whose interests are limited and whose attention is concentrated on self. The fewer the interests, the more introverted and shut in the personality is likely to be. Parents and educators are becoming more and more aware of this fact and, as a result, are trying to develop some healthy outside interests in children whose outlook seems narrow in scope.

Hobbies—or strong interests along certain lines—have, Boynton (1940) found, a definite relationship to the personality characteristics of children. Absence of a hobby is associated with a different and less desirable type of personality adjustment than is the presence of a hobby. Hobbies, Boynton stressed, are not associated with undesirable personality evaluations, while certain hobbies are associated more often than others with desirable evaluations. The value of a hobby to personality, he concluded, is positive, because hobbies have mental-hygienic significance.

Intelligence

Average intelligence makes it possible for a child to adjust with reasonable success to his environment, provided that other conditions

are favorable. But, even though other conditions may be favorable, very low or very high intelligence frequently proved to be a disadvantage in social adjustments. Because of this, the personality development of the child is unfavorably influenced.

A child whose intelligence is definitely below that of other children of the same age in school or in the neighborhood group soon finds himself an outsider. He cannot keep up to the standard set by the others, either in academic work or in extracurricular activities. Because his interests are different from theirs, and because he cannot understand or adjust himself to their interests, he soon develops feelings of inadequacy which force him to leave the group. As a result, he develops the personality traits generally associated with marked feelings of inferiority.

A very high level of intelligence likewise affects the personality development of the child, but the effect is generally far from favorable. Hollingworth (1940) has called attention to some of the special problems of personality development which are characteristic of those of very high intelligence. These are *negativism toward authority*, because the individual recognizes that authority is often irrational and erroneous in its operation; *intolerance* of those not so bright; *habits of chicanery*, which develop when very bright children try to adjust to a world that is unadapted to them; *solitary pursuits* and *companionship of older persons; self-sufficiency* and a tendency to *dominate situations.*

From her analysis, Hollingworth has concluded that the "eccentricities and lapses from common sense, popularity ascribed to genius, may be actual phenomena, and that they may arise from the psychological isolation to which extreme deviates are subject by reason of the extreme infrequency of like-minded persons."

Special Aptitudes. The child who is especially gifted along certain lines, such as art, music, acting, or writing, has many of the disadvantages found to exist in cases where the intelligence is very superior. In addition to being different from the group, the gifted child frequently finds himself in the limelight of attention. This may cause him to feel timid and shy, but in most cases the reverse is true. The gifted child not only enjoys attention from others but actually goes out of his way to court it. This frequently results in aggressive, self-centered, and thoroughly selfish behavior.

Early Experiences

Childhood experiences and the memory of these experiences as the years go by leave an indelible impression on the individual's personality. The child whose childhood has been happy has an entirely different outlook on life from that of the child whose early years have been marked

by constant friction, sadness, and emotional tension. Even though conditions improve in the child's environment as he grows older, the memories of those unhappy experiences will never be completely forgotten, nor will the effect on his personality ever be entirely eradicated.

To determine what effect early experiences had on the individual's personality, Wang (1932) analyzed the answers given by college students on a questionnaire and related them to personality traits as measured by different personality tests. He found the following experiences to be closely associated with the different personality traits measured.

1. Reading omnivorously for pleasure, participating in games at every opportunity, and being admired by associates were related to ascendance, while having limited friendships with members of one's own sex and favoring languages in high school were associated with submission.

2. Introverts as children had no, or just one or two, playmates; they indulged in social amusements only when urged, participated in games only when asked, had few intimate friends among members of their own sex and practically none among members of the opposite sex, and went alone to shows for recreation. Extroverts, by contrast, had many playmates, participated in games at every opportunity, and were admired by their associates.

3. Suggestibility was most commonly found in individuals one or both of whose parents were under twenty-five years of age at the time of the children's birth. Suggestible individuals participated in games only when asked or urged.

Membership in Minority Group

In recent years, it has become increasingly apparent that children who belong to a minority group are not only aware of the fact that they are frequently looked down upon by other children but that their behavior is often a compensation for the social discrimination which they believe is directed toward them.

An interesting study by Engle (1945) of Amish and Negro second- and third-grade children, who were compared with a control group on the California Test of Personality, revealed that the children of the control group showed better personality adjustments than did the Amish and the Negro children. There was no detailed personality pattern characteristic of the children of the two minority groups studied. Amish boys were less well adjusted in the sense of personal freedom, but better in community relations than the control boys; while Amish girls were less well adjusted than the control girls in the sense of personal worth and the feeling of belonging.

Negro boys had more nervous symptoms and were more antisocial than the control boys, while the Negro girls were more antisocial and had less satisfactory community relations than did the control girls. Children of the Amish group, Engle commented, felt that the other chil-

dren were mean to them and that they were persecuted. They also felt that they did not have as much fun and could not do things they would like to do. The Negro children felt that they had too little time to play and were punished for many things unfairly. They also felt that other people were mean to them.

Unquestionably, being a member of a minority group will affect the personality development of the child, and this influence will be of an unfavorable kind. The memory of unhappy childhood experiences, when other children are "mean" to them and discriminate against them because of their race, creed, or color, is bound to leave an indelible impression—one which will alter the child's outlook on life, as far as social relationships are concerned. It, thus, affects the personality development as the years go on.

Social Status

The popularity of the child has a considerable part in the development of his personality. Children who are accepted in the social group, who feel that other children like and admire them, or who find themselves from time to time in positions of leadership in their groups, develop a self-confidence and poise which are lacking in children who are social isolates.

The child who is friendly and self-confident, in turn, wins more friends and this adds to his already existing popularity. As his popularity increases, his poise, self-assurance, and leadership qualities also grow stronger. Just the opposite is true for children who are unpopular. They feel inferior; they are envious of their more popular associates; they resent being ignored by their peers; they are sullen and irritable, and usually carry a chip on the shoulder; or they are ready to "fly off the handle" at the slightest provocation. This, naturally, does not add to their popularity, nor does it help them to develop the personality traits which will make them popular. A vicious circle is thus set into motion, which generally cannot be checked without some professional aid.

According to Potashin (1946), unpopular children show a degree of tension and often seem awed. They acquiesce to the popular, try to impress them by showing off, or agree impetuously with whatever the popular children may suggest. The popular child, by contrast, Potashin pointed out, shows a freer, lighter attitude. He is more relaxed and unrestrained.

Socioeconomic Status

There are two commonly accepted beliefs about the effect of poor socioeconomic conditions on the personality development of the child. One point of view is that poverty may improve personality because it

acts as an incentive for the child to rise above his environment and develop personality traits which will make this possible. Just the opposite point of view is held by others. They believe that poor social and economic conditions as seen in poor neighborhoods, poor home conditions, parental neglect, and lack of social opportunities have harmful effects on children's personalities.

In an analysis of the personalities of children from good and poor environments, Francis (1933; with Fillmore, 1934) found that the physical environment of the home, such as overcrowded conditions and dilapidation, recreational space, and neighborhood opportunities, apparently had little influence per se. On the other hand, there was a positive correlation between the children's personalities and certain parental attitudes, such as the attitude toward school and schoolmates, discipline, allowance, and recreation. Francis concluded that parents' attitudes had the greatest influence on the personality development of the children and that they were the deciding factor as to whether economic and social conditions had an ill effect or otherwise on the child.

When the personality ratings for nursery-school children of good and poor neighborhoods were compared, Gesell and Lord (1927) found a consistent advantage for children from the superior economic levels. This superiority was seen especially in spontaneity, poise, and initiative. Only in self-care were children of the poorer neighborhoods superior.

Stagner (1935) in a study of college students whose families, during their childhood days, had been in good and poor economic conditions, found that poverty is not a factor making for improved personalities. Instead, students whose parents were poor during their childhood developed traits of nervousness or emotionality, introversion, inferiority feeling, and social passivity or seclusiveness. Most or all of these, Stagner maintained, are aspects of a single process, maladjustment of the individual to his social milieu.

How important a factor the neighborhood is in the development of behavior problems has been studied by Lurie *et al.* (1943). If poor neighborhoods produce more behavior-problem cases than better neighborhoods, there would be a strong argument in favor of the importance of socioeconomic status in personality development. In the 400 problem children studied, less than 1 per cent of the problems were due entirely to unwholesome neighborhoods. In less than 17 per cent of the cases the neighborhood was felt to be of equal importance with the home. Within the home, improper moral conditions and nonunderstanding parents were the outstanding causes of personality disorders, with economic status relatively unimportant.

Family Relationships

The effect of family relationships on the child's behavior has been discussed in detail in Chap. XIV. However, there are certain points relating to the direct or indirect influence of the family on the child's personality development that may be mentioned briefly here.

How family relationships will affect the child will depend to a certain extent upon the child, himself. Some children, for example, are more disturbed by tension within the home than are others. A child who is nervous and tense will be more upset by the attention given to a new baby than he would if he were more phlegmatic in disposition. Similarly, a healthy child will react very differently to the attention and pampering he receives as the "baby" of the family than he would if he were a delicate, sickly child.

Influence of Parents. Much emphasis has been placed on the influence of parents in the personality development of the child. Lerner and Murphy (1941) maintain that the child's personality is the "result of the impact on him of all the conscious and unconscious expressions of parents' personalities, as well as their conscious attitudes toward children and their bringing up." The parents' attitude toward the child and the home influences the child's emotional adjustment, Lewis (1945) maintains.

Symonds (1938) has stressed the importance of the parents' attitudes toward the child in personality development thus:

> The child who is wanted by his parents and grows up in a home atmosphere that is characterized by understanding, loving care and affection, has every chance to develop into a well-balanced, emotionally stable adult. The child who is neglected or brutally treated by either parent, or even the child who is rejected in more subtle ways—by criticism, hostility, submerged under a cloak of insincere care and affection—is destined on the average to show strong aggressive traits, to be hostile and antagonistic toward those with whom he must have dealings and to develop tendencies which may lead to delinquency (p. 486).

The attitudes and personalities of the parents contribute more to the development of the child's personality than do the external factors of his environment, according to Shirley (1941). The reason for this, she explained, is that they permeate every response the parents make to the child and determine the manner in which they administer child care. To illustrate this, Shirley made two case studies over a period of time, to show what happens when children of similar intelligence and social endowments are subjected to two different environments and two different regimes planned by their mothers. These regimes bore the imprint of the mothers' personalities and permeated every aspect of the care of

the child, such as the choice of clothing, discipline, and methods of handling the child.

Shirley (1942) also noted that children's adjustments to a strange situation, as illustrated in visits to the Harvard Center for Research in Child Health and Development, depend largely upon the wholesomeness

FIG. 89. The attitude of the parents is a factor of importance in the development of the child's personality. (*The Centaur Company.*)

of their upbringing at home and the security, confidence, and affection given them by their parents. According to her,

> A secure and wholesomely loved child goes forth to meet a new experience in a spirit of adventure, and comes out triumphant in his encounters with new places, new materials, and new friends, old and young. A child that is oversheltered or underloved goes forth from his home with misgivings and doubts, and gives an impression of inadequacy and immaturity in his encounter with new experiences that makes him unwelcome either in the society of adults or children (p. 217).

Family-life Patterns. The child's attitude toward his home life—which is dependent to a large extent upon what kind of home life he has—is a factor of importance in the child's personality development. A pattern of home life, Stott (1939*a*) found, in which children tell their parents their joys and troubles, good times are enjoyed by the family

Experimental studies of the relationship of ordinal position to personality have not shown quite the marked influence that Adler believes to exist. Stuart (1926) found no significant relationship between personality test scores and order of birth. According to Bender's (1928) findings, youngest children are more submissive than the average, while only children are less submissive than the average. Stagner and Katzoff (1936) reported no significant difference in personality test scores according to order of birth, though small family size was related to better personality development. When first-born children are dispossessed by later born children, they were found to develop more independence.

Playmates and Friends

With the development of group consciousness in late childhood (see pages 311–314), the child's playmates and friends begin to exert a powerful influence on the development of his personality. In his desire to be socially approved by the group and accepted as a member of the group, the child will put forth every possible effort to develop traits which the group as a whole admires. Besides, he attempts to eliminate—or at least to minimize—the intensity of undesirable personality traits which he discovers the group disapproves of and which may readily put him in the position of a social isolate.

As was pointed out earlier in the chapter (pages 572–574), the young child is more anxious to have the approval of parents and other adults than of his peers. But, after he has entered school and become a member of a school group, the social approval of his playmates becomes more necessary to him than the approval of his parents. It is then that he turns his attention to the development of personality traits which his playmates admire, even though these may not be the ones admired by his parents.

"SICK" PERSONALITIES

Personality maladjustments caused by one or more undesirable personality traits sufficiently well developed to color the quality of the individual's whole behavior make their appearance in simple, undeveloped forms during the early years of childhood. Because they are, at that age, simple and undeveloped, it is questionable whether the term "maladjusted" should be applied to them. This is too likely to suggest that the child is abnormal or that there is a marked difference between his personality and that of other children. Watson (1925) has applied the term "sick" to such personality disturbances.

A "sick" personality is one in which a slight maladjustment interferes with the child's ability to get along with others. This term, "sick," also

implies that there is need for some corrective aid, just as in the case of physical illness. With proper care, the illness can be so completely overcome that no trace of the trouble will remain. Without this aid, however, the personality sickness might correct itself or be outgrown in time, but—as in physical sickness—the chances are that the illness will increase unless positive action is taken to correct it.

Causes of "Sick" Personalities. In the personality development of the child, he must learn to accept himself and the conditions of his life with moderate satisfaction. To do this, he must appreciate his abilities as well as his limitations and be able to make satisfactory adjustments to conditions as they exist. Some children make these adjustments with little or no difficulty. Other children find adjustment difficult. Before the childhood years are over, they are out of step with the group and find themselves in the role of social isolates.

In an analysis of the common causes of maladjustment in the personality development of the child, Jordon (1942) has listed the following causes:

1. Thwarting of impulses and desires which lead to a feeling of inferiority, such as feeling of guilt because of sex delinquencies or failure in school.
2. Undue emotional stimulation, such as some terrible emotional shock or continued overexcitement during a long period of time.
3. Bad home conditions caused by parental disagreements, parental separation, or the child's inability to rise to the level of the family's aspirations.

Frequency of Personality "Sickness." Below the age of twelve years, definite mental illness is rare. But, symptoms appear at that time in ineffective adjustments to everyday life situations, such as crying, attention-getting devices, and daydreaming, which, if permitted to go unchecked, may result in serious mental illness as the child reaches maturity.

Macfarlane (1943) maintains that no normal child is completely free from what is labeled as "problem behavior." The average number of forms of problem behavior is from four to six per child, with the frequency varying from age to age. Furthermore, some fall into clusters—as quarrelsomeness, mood swings, negativism, irritability, temper tantrums, jealousy, and competitiveness. In the cluster of withdrawn, introverted behavior are submissiveness, shyness, somberness, underactivity, and excessive reserve.

Common Forms of Personality "Sickness." There are a number of personality traits of an undesirable sort that appear in a mild form in children. At first, they appear very harmless and are frequently allowed to persist, without any real effort's being made to overcome them. Fol-

lowing is a list of common forms of "sick" personality traits in childhood, together with suggestions as to their probable causes.

1. *Imaginary Invalidism.* This takes the form of imagining that one is not feeling well, though there is no apparent physical cause for it. To most young children, imaginary illness is a quick and easy way to get out of a difficult task or to bid for sympathy and attention.

FIG. 90. No normal child is completely free from "problem behavior." (*Courtest of The Library of Congress.*)

2. *Projecting Blame.* It is not unusual to project to others the blame for one's own shortcomings. Many young children, brought up under strict discipline, discover more or less by trial and error that they can free themselves from blame or punishment by the simple procedure of thrusting the blame upon someone else. Those who are blamed are, in most instances, only partially responsible for what has happened. In time, the child actually comes to believe that he has in no way been responsible for the wrong act. He believes that it is "Johnny's fault" or that "Mary did it."

3. *Rationalization, or Self-justification.* This is a means of explaining to others, as well as to oneself, an act that is frowned upon. Every child is sensitive to criticism and he likes to feel that what he does is approved of by others. He, therefore, more or less unconsciously selects from a number of possible causes for his behavior the one that he thinks will be most acceptable to others, even though it may be only a partial cause. If it works, and it generally does, he will escape criticism or punishment. At the same time, he will have the added feeling of satisfaction that he has not told a lie.

4. *Crybaby Tendencies.* This form of "sickness" is that of bursting into tears or looking weepy when one's feelings are hurt or when one cannot have one's own way. Tears may be tolerated, and usually are, in young children. Many adults actually go so far as to feel sorry for a young child whenever he cries. They even permit him to do as he pleases, in the hope that a smile will replace his tears.

5. *Bullying and Teasing.* These practices stem from a child's feelings of inferiority and insecurity. By inflicting physical pain on others through bullying or mental pain through teasing, the child feels superior. This is pleasant to him, even though it is at the expense of another.

6. *Feelings of Superiority.* Such an attitude is very common among young children, because of the attention they receive as a result of their helplessness and dependence upon others. This feeling is reflected in a grasping, selfish, aggressive type of behavior. As most children behave this way when they are very young, it does not attract much attention. However, as the child grows older, he finds himself thoroughly disliked and, as a result, attempts to win the favor of the group by some other means, often as unhealthy as the behavior he is trying to compensate for.

7. *Feelings of Inferiority.* This trouble more frequently develops in late childhood and adolescence, after the child has had adequate opportunities to compare his abilities with those of his contemporaries. However, children who are constantly criticized for whatever they do, or who are ridiculed by older brothers and sisters for their "babyish ways," may acquire feelings of inferiority that are reflected in shy, retiring, self-effacing behavior.

8. *Feelings of Martyrdom.* The suffering attitude of the martyr is usually the result of favoritism in the home, or of resentment caused by the granting of privileges to an older child, which the younger child feels that he, too, should have. The characteristic behavior associated with feelings of martyrdom consists of complaining, being envious of others, and being resentful toward those whom the child feels are responsible for making a martyr of him. The child who feels that he is a martyr makes himself thoroughly unhappy and is generally poorly adjusted.

9. *The "Sour-grapes" Attitude.* This consists of minimizing the value of things that one cannot have or even ridiculing them. It is the attitude of the fox in the fable who declared that he did not want the grapes beyond his reach, because they were "sour." To cover up disappointment when they cannot have what they want, many young children convince themselves that they really did not want those things, after all, because they were not worth wanting. In this way, their disappointment is lessened.

10. *Excessive Daydreaming.* This practice is a retreat from unpleasant reality and a compensation for boredom. While it is true that adolescence is the "daydream age," there are numbers of young children who retreat from situations that bore them by withdrawing into the world of make-believe and daydreams. In childhood, daydreaming may not be serious but, because it is an enjoyable experience, it can readily develop into a habit which will occupy more and more time.

11. *States of General Anxiety.* Anxiety and a tendency to worry may arise from genuine fear, but they are more likely to be bids for attention. The child who allows himself to worry becomes jittery and jumpy to the extent that he may impair his health and happiness; while at the same time, the habit may interfere with his adjustment to other children.

12. *Negativism.* This reaction is normal in early childhood, and few young children escape the phase. When, however, it persists beyond the time when it is usually found, the negativistic attitude may be regarded as a "danger signal." It shows that the child is subjected to too many restraints and that he is trying in any way he can to break down the resistance that blocks his path.

13. *Playing the Tattletale.* Carrying tales to adults about others is something that makes a child feel important. Unfortunately, his pleasure in reporting the misbehavior of others is increased because of the attention and interest he receives from adults. To them it is a way of knowing what goes on behind their backs. They frequently do not realize what an unhealthy method of getting personal satisfaction they are encouraging in the child.

14. *Clowning.* Showing off by clowning or "cutting up" in the presence of others is a childish method of focusing attention upon oneself. It may be thought cute when the child is very young, but the "clown," whose only method of attracting attention is by cutting up, soon earns the reputation of being a "fool."

MEASURES OF PERSONALITY

Measurement of personality at early levels is extremely difficult and far from accurate. At the best, personality measurement at the older ages is none too satisfactory, nor does it compare favorably with the measurement of intelligence at those levels. However, it is of practical importance to know just how the child's personality is developing, how it compares with that of other children of the same age, and what signs, if any, there are of personality maladjustments.

A number of different approaches to the study of personality in children have been made. In some of these, an attempt is made to describe as accurately as possible the total picture of the child's personality. In others, an objective measurement of different areas of personality is made. The most common types of personality measurement and an illustration of each follow.

Rating Scales

In the rating scale, the child's personality is evaluated by one or two persons who know the child intimately enough to be qualified to pass judgment on his personality make-up. Knowing the child well enough

to be able to rate him, however, might imply also the rater's inclination to be influenced by prejudice. This "halo" effect frequently gives a bias to the rating, which militates against the accuracy of the results.

Rating scales, as used in personality measurement of children, are of two types: the *graphic rating scales* and the *guess-who*, or *reputation, test.* In the *graphic rating scale*, the rater checks a point on a scale to indicate his opinion of the subject in that particular trait. A number of different personality traits are then given, each followed by a line on which the rater shows where, in his opinion, the child who is being rated would stand in that particular trait, as compared with other children.

Is he emotionally calm or excitable ?

No emotional responses. Apathetic. Stuporous (4)	Emotions are slowly aroused (2)	Responds quite normally (1)	Is easily aroused (3)	Extreme reactions. Hysterical. High strung (5)

SOURCE: HAGGERTY, OLSON, and WICKMAN, "Behavior Rating Schedule," World Book Company, Yonkers, N.Y., 1930.

A modified form of the rating scale consists of checking the one statement in five that most accurately describes a child in a given situation. This technique was used by Joël (1936) to measure "behavior maturity" or grown-up-ness of children of nursery-school age. Twenty different situations that reveal the child's behavior maturity in different areas are given and the rater checks the word picture that most closely describes the child, as follows:

Does his usual mood show a state of satisfactory adjustment?

1. Is never unhappy.
2. Is seldom unhappy (only when tired, for example).
3. Is easily made unhappy but quick to restore.
4. Is easily made unhappy and slow to restore.
5. Is usually unhappy (whines, sulks, etc.)

What is his place in the group?

1. Initiates group play; always assumes leadership.
2. Initiates group play, but is not always leader (he assumes leadership, for example, in certain restricted activities or in certain restricted groups).
3. Is neither leader nor follower (does not assume leadership, but makes himself felt in the group).
4. Is always a follower; rarely gets attention from the group.
5. Has no contact with a group.

The "guess who" method of rating was devised by Hartshorne and May (1928) in 1928. The procedure involves reading to a group of children descriptions of different types of personality—as, a "neat, popular boy" or a "giggling, restless girl." The children are then asked to write

down the names of the children who fit into the description or who fit into a given pattern. Characteristic word pictures are the following:

This is a jolly good fellow—friends with everyone, no matter who they are.

This one is always picking on others and annoying them.

Here is a crabber and knocker. Nothing is right. Always kicking and complaining.

Here is someone who flares up and gets mad on the slightest excuse.

Tryon (1939) gave children word pictures of two extremes of each trait. In the case of restlessness, for example, the word pictures were these:

Here is someone who finds it hard to sit still in class: he (or she) moves around in his (or her) seat or gets up and moves around.

Here is someone who can work quietly without moving around in his (or her) seat.

Questionnaires

A questionnaire consists of a long list of questions which may be given a Yes or a No answer. By means of the answers, an attempt is made to evaluate the individual's personality. One of the most widely used of the questionnaires suitable for children is the California Test of Personality. This comes in five series, for primary, elementary, intermediate, secondary, and adult levels. Twelve areas relating to self-adjustment and social adjustment are measured.

The organization of the California Test of Personality consists of the following outline of questions:

- Life adjustment: a balance between self and social adjustment
  - 1. Self-adjustment, based on feelings of personal security
    - *A.* Self-reliance
    - *B.* Sense of personal worth
    - *C.* Sense of personal freedom
    - *D.* Feeling of belonging
    - *E.* Freedom from withdrawing tendencies
    - *F.* Freedom from nervous symptoms
  - 2. Social adjustment, based on feelings of social security
    - *A.* Social standards
    - *B.* Social skills
    - *C.* Freedom from antisocial tendencies
    - *D.* Family relations
    - *E.* Social relations
    - *F.* Community relations

The twelve components given above represent characteristic modes of response to situations in certain fields, or areas, of personality. In each of these areas a number of questions are given to determine what is the characteristic behavior of the child in these different situations. Typical

questions from the Primary Form, (kindergarten to grade 3) are as follows:

Self-reliance:
Do you need help to eat your meals?
Is it easy for you to play by yourself when you have to?
Feeling of belonging:
Are you lonesome even when you are with people?
Do you like to go to school?
Freedom from antisocial tendencies:
Is someone at home so mean that you often get angry?
Do you like to push or scare other children?
Family relations:
Do you wish you could live in some other home?
Do you feel that no one at home loves you?

Measures of Behavior Samplings

Because it is difficult to get answers to questions, especially from young children, and because rating scales are likely to be influenced by the "halo" surrounding the child, studies of samplings of behavior have been made in an attempt to get a true picture of the child's personality. Hartshorne and May's (1928) samplings of honesty in different everyday situations were among the first tests of this sort. For a description of the method used see pages 466–467.

More recently, Wolff (1942), through the use of moving pictures, studied static positions of the child's body, dynamic movements of the body, manipulations of plastic materials, finger paintings, brush paintings, and pencil drawings. He found that certain personality traits appeared in all forms of expression and that certain trends are dominant features of the child's personality.

Projective Methods

Projective methods of measuring personality are based on the assumption that the child reveals, or "projects," his personality in free, unrestricted activity of some sort. The most widely used of the projective methods is the Rorschach test of 10 ink blots, standardized in form, some of which are plain black on white and some in colors. The child is asked to tell what he sees in the blot. This is then studied, to see whether it reveals emotions, attitudes, and mental sets of the child.

Other projective techniques for use with young children have also been attempted. Despert (1940) has suggested that the play of preschool children be analyzed in a controlled nursery-school situation in which play materials are selected to permit ready identification with members of the child's family.

According to Alschuler and Hattwick (1943) an analysis of children's painting reveals personality traits. Color, they maintain, gives a clear insight into the child's emotional life. The child who overemphasizes color has a strong emotional orientation. Line and form, on the other hand, show the nature of the child's emotional control.

Buchanan (1945) has devised a picture-interpretation personality test in which the child is shown 10 outline pictures covering such subjects as a child with one parent, a child alone, and a child in social relationships. The child is asked to make up a story about each picture. Buchanan reported that children's responses to the pictures are influenced by their personality traits, as well as by their intelligence. If their personalities are warped in any way, the quality of their responses is lowered.

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